WHITE PLAINS CITY SCHOOL DISTRICT

HIGH SCHOOL ADDITION
SED CONTROL NO. 66-22-00-01-0-016-030

CONTRACT C - CIVIL AND SITE WORK
CONTRACT G - GENERAL CONSTRUCTION WORK
CONTRACT M - HEATING VENTILATION AND AIR CONDITIONING WORK
CONTRACT P - PLUMBING WORK
CONTRACT E - ELECTRICAL WORK

FRONT END DOCUMENTS

SAMPLE AIA DOCUMENTS

TECHNICAL SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

DIVISION 2 – DEMOLITION

DIVISION 03 - CONCRETE

DIVISION 04 – MASONRY

DIVISION 05 – METALS

DIVISION 09 – FINISHES

DIVISION 10 – SPECIALTIES

DIVISION 11 – EQUIPMENT

DIVISION 12 – FURNISHINGS

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Note: The bidder is asked to use either black ink or typewriter (black ribbon) in completing this proposal form. Each line-item amount must be completed. Failure to do so will be grounds for disqualification of the bidder.

BASE BID: Contract C – Civil and Site Work

ITEM 1 – BONDS and INSURANCES

(written in words) _____($)

ITEM 2 – MOBILIZATION

(written in words) _____($)

ITEM 3– DIVISION 1 – GENERAL REQUIREMENTS

(written in words) _____($)

ITEM 4 – DIVISION 1 – PROJECT SUPERVISION

(written in words) _____($)

ITEM 5 – DIVISION 2 – DEMOLITION WORK

(written in words) _____($)

ITEM 6 – DIVISION 3 – CONCRETE

(written in words)_____($)

ITEM 7 – DIVISION 4 – MASONRY

(written in words) _____($)

ITEM 8 – DIVISION 5 – METALS

(written in words) _____($)

ITEM 9 – DIVISION 7 – THERMAL AND MOISTURE PROTECTION

(written in words) _____($)

ITEM 10 – DIVISION 10 – SPECIALTIES

(written in words) _____($)

ITEM 11– DIVISION 31 – SITE WORK

(written in words) _____($)

ITEM 12– DIVISION 32 – EXTERIOR IMPROVEMENTS

(written in words) _____($)

ITEM 13– DIVISION 33 – UTILITIES

(written in words) _____($)

ITEM 14 – DEMOBILIZATION

(written in words) _____($)

ITEM 15 – AS-BUILT DRAWINGS

(written in words) _____($)

ITEM 16 – PROJECT CLOSEOUT

(written in words) _____($)

ALLOWANCE C1 – ALLOWANCE FOR GENERAL CONTINGENCY

(written in words) *Fifty-five Thousand Dollars and Zero Cents* ($55,000.00)

TOTAL BASE BID (ITEMS 1 – 16 INCLUSIVE, PLUS ALLOWANCE C1)

(written in words) _____ ($)

ALTERNATES

The contractor shall clearly state whether cost indicated is to be added to or deducted from the base bid cost. Failure to clearly state same will be grounds for disqualification of the bidder.
All work included under this heading shall be subject to the general conditions of the project. All construction, workmanship and finishes required by the alternates shall be as specified in the applicable sections of the specifications manual.
The undersigned proposes and agrees that should the following alternates be accepted and included in the contract, the amount of the TOTAL BASE BID will be revised as follows. The undersigned further agrees that should the following Alternates be accepted at a subsequent date, after the base bid contract is awarded, due to additional funds provided to the school district through a Smart Schools Bond Act, the alternate bid prices indicated shall be held and honored for a period of one year from the date of contract signing.

NUMBER	DESCRIPTION	COST
ALT-C1 (Deduct)	**Omit all plants including shade trees, ornamental trees, deciduous trees, evergreen shrubs, and perennials. All lawn areas to remain in base bid. This alternate shall include all labor and material.**	**($)**

UNIT PRICES

The contract shall include unit prices as herein stated. Should the amount of work required by the contract documents be increased or decreased, the following unit prices shall be used as a basis for computing the cost to the district, or the credit due the district as the case may be, for such increases or decreases in the work. The listed unit prices will also be used for determining the value of quantities included in the specifications. Prices shall reflect the basis for furnishing all labor, material, equipment and other related

items necessary for completion of work (in place). The quoted figure shall include contractor's overhead and profit.

THE OWNER/ARCHITECT HEREBY RESERVES THE RIGHT TO ORDER ANY ADDITION OR DEDUCTION OF MATERIALS ON BASIS OF UNIT COST FIGURES QUOTED.

NUMBER	DESCRIPTION	COST
CU-1	Provide all labor, materials and equipment to excavate/remove rock encountered and replace with compacted structural fill, to be used as an add or deduct from allocation of the Bid Allowance for Rock Removal. Unit of Measurement: per cubic yard of rock removal measured in place.	**$ CY**

Note: The WHITE PLAINS CITY SCHOOL DISTRICT is exempt from Federal, New York State and local taxes. TOTAL AMOUNT BID shall be exclusive of all taxes.

THE BIDDER UNDERSTANDS THAT THE OWNER RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS AND TO WAIVE ANY INFORMALITIES IN THE BIDDING.

THE BIDDER AGREES THAT THE BID SHALL BE GOOD AND MAY NOT BE WITHDRAWN FOR A PERIOD OF **FORTY-FIVE (45)** CALENDAR DAYS AFTER THE SCHEDULED CLOSING TIME FOR RECEIVING BIDS.

THE BIDDER HAS SUBMITTED ALL REQUESTS FOR OTHER BRAND NAMES OR PRODUCTS NOT LISTED IN THE SPECIFICATIONS IN ACCORDANCE WITH ARTICLE 6(W) OF THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION.

SITE SUPERVISION

THE SUCCESSFUL CONTRACTOR IS TO PROVIDE FULL TIME SITE SUPERVISION FOR HIS OR HER STAFF, SUBCONTRACTORS AND SUPPLIERS FOR THE DURATION OF THIS PROJECT. A COMPETENT SUPERINTENDENT SHALL BE IN ATTENDANCE AT THE JOB SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED UNDER THEIR CONTRACT. THE SUPERINTENDENT IS RESPONSIBLE TO VISIT THE JOB SITE DAILY WHEN WORK IS NOT BEING PERFORMED UNDER THEIR CONTRACT AND TO MONITOR THE OVERALL CONSTRUCTION PROGRESS. A QUALIFIED SITE SUPERINTENDENT MUST HAVE THE AUTHORITY TO REPRESENT AND MAKE DECISIONS FOR HIS OR HER COMPANY WITH REGARDS TO THE SUBJECT JOB, MUST BE ABLE TO GIVE GUIDANCE AND DIRECTION TO EMPLOYEES, SUBCONTRACTORS AND SUPPLIERS, AND MUST BE KNOWLEDGEABLE ABOUT THE WORK TO BE PROVIDED. **FAILURE TO PROVIDE A QUALIFIED SITE SUPERINTENDENT AT THE JOB SITE SHALL SUBJECT SAID PRIME CONTRACTOR TO A PENALTY OF $1,000 PER DAY FOR EVERY OCCURRENCE.**

TIME OF COMPLETION

ALL WORK UNDER THIS CONTRACT SHALL BE COMPLETED BETWEEN THE FOLLOWING HOURS, IN ACCORDANCE WITH THE FOLLOWING DATES:

WORK DAYS:	**Monday – Saturday**
WORK HOURS:	**7:00 AM - 8:00 PM**
CONSTRUCTION START DATE:	**Addition June 30, 2025** **Interior Renovation June 29, 2026**
SUBSTANTIAL COMPLETION:	**June 18, 2027**

Interior Renovation August 14, 2026

FINAL COMPLETION: **July 17, 2027**

IF NECESSARY, WEEKEND, HOLIDAY AND EVENING WORK SHALL BE PROVIDED TO ENSURE THE COMPLETION DATES LISTED ABOVE, AT THE SOLE COST AND EXPENSE OF THE BIDDER.

FAILURE OF THE CONTRACTOR TO COMPLETE WORK BY THE SPECIFIED TIME SHALL SUBJECT HIM/HER TO LIQUIDATED DAMAGES AS SET FORTH IN ARTICLE 13 OF THE GENERAL CONDITIONS.

THE ARCHITECT/ENGINEER SHALL ACT AS THE RECORD KEEPER OF CONTRACT DAYS; HE WILL BE THE SOLE JUDGE OF DELAYS CAUSED BY WEATHER. ONLY WEATHER DELAYS, AS ADJUDGED BY THE ARCHITECT/ENGINEER, WILL BE CONSIDERED FOR EXTENSIONS OF THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT A BI-WEEKLY REQUEST FOR DELAYS DUE TO WEATHER TO THE ARCHITECT/ENGINEER FOR APPROVAL. NO OTHER DELAY CLAIMS WILL BE ACCEPTED, FOR CREDIT TOWARDS THE PROJECT COMPLETION SCHEDULE, REGARDLESS OF THE SOURCE OF THE DELAY.

FAILURE OF THE CONTRACTOR TO COMPLETE ALL WORK SHOWN AND SPECIFIED IN THE CONTRACT DOCUMENTS, BY ALL OF THE SPECIFIED TIME FRAMES, SHALL SUBJECT THE CONTRACTOR TO LIQUIDATED DAMAGES, AS SET FORTH IN ARTICLE 13 OF THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, IN THE SUM OF ONE THOUSAND DOLLARS ($1,000.00) PER CALENDAR DAY. SUCH DAMAGES WILL COMMENCE ON THE DAY AFTER THE COMPLETION DATE OR THE DAY AFTER ANY LISTED MILESTONE DATE IN THE NOTICE TO PROCEED.

WITHIN TEN (10) CONSECUTIVE CALENDAR DAYS AFTER THE DATE OF THE NOTICE OF AWARD, THE BIDDER SHALL EXECUTE THE CONTRACT AND FURNISH THE REQUIRED PERFORMANCE BOND, PAYMENT BOND AND INSURANCES.

THE BOARD OF EDUCATION OF THE DISTRICT RESERVES THE RIGHT TO AWARD THIS CONTRACT TO OTHER THAN THE LOW BIDDER IF THE LAW SO PERMITS.

THE UNDERSIGNED HEREBY ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA (IF ANY):

ADDENDUM NO.	DATED
_____	_____
_____	_____

SPECIFIC DAMAGES WILL BE ASSESSED AND DEDUCTED FROM AMOUNTS OTHERWISE DUE THE CONTRACTOR FOR ADDITIONAL INSPECTION (FIELD) AND CONTRACT ADMINISTRATION (OFFICE) TIME EXPENDED BY THE ARCHITECT/ENGINEER AND/OR OTHER CONSTRUCTION EMPLOYEE(S) HIRED TO ADMINISTER OR OBSERVE THE CONTRACT, SHOULD THE CONTRACTOR COMPLETE THE CONTRACT BEYOND THE CONTRACT COMPLETION PERIOD SPECIFIED ABOVE.

SUCH DEDUCTION SHALL BE IN ACCORDANCE WITH THE ARCHITECT, ENGINEER'S, AND/OR OTHER CONSTRUCTION EMPLOYEE(S) STANDARD HOURLY BILLING RATES IN EFFECT AT THE TIME FOR THE SCHOOL DISTRICT.

THE REQUIREMENTS OF THE PROPOSAL HAVE BEEN COMPLETELY READ, UNDERSTOOD AND ACKNOWLEDGED BY THE BIDDER.

BIDDER: _____

BIDDER'S ADDRESS: _____

SIGNED BY: _____ TITLE: _____

DATE: _____

Telephone number where the contractor or a competent representative can accept a telephone message and provide a reasonable reply as soon as possible, but not later than twenty-four (24) hours:

DAY: (___) _____ NIGHT: (___) _____

FAX: (___) _____

FEDERAL I.D. NO. OR SOCIAL SECURITY NO.: _____

Note: The bidder is asked to use either black ink or typewriter (black ribbon) in completing this proposal form. Each line item amount must be completed. Failure to do so will be grounds for disqualification of the bidder.

BASE BID: Contract G – General Construction Work

ITEM 1 – BONDS and INSURANCES

(written in words) _____($)

ITEM 2 – MOBILIZATION

(written in words) _____($)

ITEM 3– DIVISION 1 – GENERAL REQUIREMENTS

(written in words) _____($)

ITEM 4 – DIVISION 1 – PROJECT SUPERVISION

(written in words) _____($)

ITEM 5 – DIVISION 2 – DEMOLITION WORK

(written in words) _____($)

ITEM 6 – DIVISION 3 – CONCRETE

(written in words)_____($)

ITEM 7 – DIVISION 4 – MASONRY

(written in words) _____($)

ITEM 8 – DIVISION 5 – METALS

(written in words) _____($)

ITEM 9 – DIVISION 6 – WOOD, PLASTICS AND COMPOSITES

(written in words) _____($)

ITEM 10 – DIVISION 7 – THERMAL AND MOISTURE PROTECTION

(written in words) _____($)

ITEM 11 – DIVISION 8 - OPENINGS

(written in words) _____($)

ITEM 12 – DIVISION 9 - FINISHES

(written in words) _____($)

ITEM 13 – DIVISION 10 – SPECIALTIES

(written in words) _____ ($)

ITEM 14 – DIVISION 11 – EQUIPMENT

(written in words) _____ ($)

ITEM 15 – DIVISION 12 – FURNISHINGS

(written in words) _____ ($)

ITEM 16 – DIVISION 14 – CONVEYING EQUIPMENT

(written in words) _____ ($)

ITEM 17 – DEMOBILIZATION

(written in words) _____ ($)

ITEM 18 – AS-BUILT DRAWINGS

(written in words) _____ ($)

ITEM 19 – PROJECT CLOSEOUT

(written in words) _____ ($)

ALLOWANCE G1 – ALLOWANCE FOR GENERAL CONTINGENCY

(written in words) *Two Hundred Thousand Dollars and Zero Cents* (*$ 200,000.00*)

TOTAL BASE BID (ITEMS 1 – 19 INCLUSIVE, PLUS ALLOWANCES G1)
(written in words) _____ ($)

ALTERNATES

The contractor shall clearly state whether cost indicated is to be added to or deducted from the base bid cost. Failure to clearly state same will be grounds for disqualification of the bidder.

All work included under this heading shall be subject to the general conditions of the project. All construction, workmanship and finishes required by the alternates shall be as specified in the applicable sections of the specifications manual.
The undersigned proposes and agrees that should the following alternates be accepted and included in the contract, the amount of the TOTAL BASE BID will be revised as follows. The undersigned further agrees that should the following Alternates be accepted at a subsequent date, after the base bid contract is awarded, due to additional funds provided to the school district through a Smart Schools Bond Act, the alternate bid prices indicated shall be held and honored for a period of one year from the date of contract signing.

NUMBER	DESCRIPTION	COST
ALT-G1 (Add)	**Contractor to provide and install new front entry canopy system and associated items where indicated in drawings. This alternate shall include all material and labor for this work.**	**($)**
ALT-G2 (Deduct)	**Omit corridor (I C001, I C002, I C004, I C101, I C102, I C103, I C104, I C104A, I C105, I C105A) ceiling system 4'-0"x4'-0"(ACP-2) and 4'-0"x6'-0"(ACP-3). Contractor to provide and install new 2'-0"x2'-0" ceiling system (ACP-1) @ +/- 10'-0" AF. This alternate shall include all material and labor for this work.**	**($)**
ALT-G3 (Deduct)	**Omit presentation space (I 002) ceiling system (ACP-4). Contractor to provide and install new 2'-0"x2'-0" ceiling system (ACP-1) @ +/- 10'-0" AFF. This alternate shall include all material and labor for this work.**	**($)**
ALT-G4 (Deduct)	**Omit Art Studio 1 (I 110), Art Studio 2 (I 112), Art Studio 3 (I 106), Fashion Design Room (I 108), Metal Work (I 102), and Ceramics (I 104) ceiling system (ACB-2 and ACB-3). Contractor to provide and install eight (8) acoustical panels (ACP-5) installed to underside of roof deck in each room.**	**($)**
ALT-G5	**Omit**	**($)**
ALT-G6 (Deduct)	**Omit all wall coverings and tack-able surfaces from corridors. Prep walls for spackle and paint only. Rubber base to remain.**	**($)**

UNIT PRICES

The contract shall include unit prices as herein stated. Should the amount of work required by the contract documents be increased or decreased, the following unit prices shall be used as a basis for computing the cost to the district, or the credit due the district as the case may be, for such increases or decreases in the work. The listed unit prices will also be used for determining the value of quantities included in the specifications. Prices shall reflect the basis for furnishing all labor, material, equipment and other related items necessary for completion of work (in place). The quoted figure shall include contractor's overhead and profit.

THE OWNER/ARCHITECT HEREBY RESERVES THE RIGHT TO ORDER ANY ADDITION OR DEDUCTION OF MATERIALS ON BASIS OF UNIT COST FIGURES QUOTED.

NUMBER	DESCRIPTION	COST
GU-1	Provide all labor, materials and equipment to excavate/remove rock encountered and replace with compacted structural fill, to be used as an add or deduct from allocation of the Bid Allowance for Rock Removal. Unit of Measurement: per cubic yard of rock removal measured in place.	**$ CY**

Note: The WHITE PLAINS CITY SCHOOL DISTRICT is exempt from Federal, New York State and local taxes. TOTAL AMOUNT BID shall be exclusive of all taxes.

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FINAL COMPLETION:	**July 17, 2027**

IF NECESSARY, WEEKEND, HOLIDAY AND EVENING WORK SHALL BE PROVIDED TO ENSURE THE COMPLETION DATES LISTED ABOVE, AT THE SOLE COST AND EXPENSE OF THE BIDDER.

FAILURE OF THE CONTRACTOR TO COMPLETE WORK BY THE SPECIFIED TIME SHALL SUBJECT HIM/HER TO LIQUIDATED DAMAGES AS SET FORTH IN ARTICLE 13 OF THE GENERAL CONDITIONS.

THE ARCHITECT/ENGINEER SHALL ACT AS THE RECORD KEEPER OF CONTRACT DAYS; HE WILL BE THE SOLE JUDGE OF DELAYS CAUSED BY WEATHER. ONLY WEATHER DELAYS, AS ADJUDGED BY THE ARCHITECT/ENGINEER, WILL BE CONSIDERED FOR EXTENSIONS OF THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT A BI-WEEKLY REQUEST FOR DELAYS DUE TO WEATHER TO THE ARCHITECT/ENGINEER FOR APPROVAL. NO OTHER DELAY CLAIMS WILL BE ACCEPTED, FOR CREDIT TOWARDS THE PROJECT COMPLETION SCHEDULE, REGARDLESS OF THE SOURCE OF THE DELAY.

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THE BOARD OF EDUCATION OF THE DISTRICT RESERVES THE RIGHT TO AWARD THIS CONTRACT TO OTHER THAN THE LOW BIDDER IF THE LAW SO PERMITS.

THE UNDERSIGNED HEREBY ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA (IF ANY):

ADDENDUM NO.	DATED
_____	_____
_____	_____

SPECIFIC DAMAGES WILL BE ASSESSED AND DEDUCTED FROM AMOUNTS OTHERWISE DUE THE CONTRACTOR FOR ADDITIONAL INSPECTION (FIELD) AND CONTRACT ADMINISTRATION (OFFICE) TIME EXPENDED BY THE ARCHITECT/ENGINEER AND/OR OTHER CONSTRUCTION EMPLOYEE(S) HIRED TO ADMINISTER OR OBSERVE THE CONTRACT, SHOULD THE CONTRACTOR COMPLETE THE CONTRACT BEYOND THE CONTRACT COMPLETION PERIOD SPECIFIED ABOVE.

SUCH DEDUCTION SHALL BE IN ACCORDANCE WITH THE ARCHITECT, ENGINEER'S, AND/OR OTHER CONSTRUCTION EMPLOYEE(S) STANDARD HOURLY BILLING RATES IN EFFECT AT THE TIME FOR THE SCHOOL DISTRICT.

THE REQUIREMENTS OF THE PROPOSAL HAVE BEEN COMPLETELY READ, UNDERSTOOD AND ACKNOWLEDGED BY THE BIDDER.

BIDDER: _____

BIDDER'S ADDRESS: _____

SIGNED BY: _____ TITLE: _____

DATE: _____

Telephone number where the contractor or a competent representative can accept a telephone message and provide a reasonable reply as soon as possible, but not later than twenty-four (24) hours:

DAY: (___) _____ NIGHT: (___) _____

FAX: (___) _____

FEDERAL I.D. NO. OR SOCIAL SECURITY NO.: _____

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the requirements for measurements and records made for payment purposes and describes the item(s) under which payment(s) will be made for the Work performed under this Contract.

B. All work shown or specified in the Contract Documents shall be performed.

C. Items not specified to be measured or paid for (for which no specific pay item exists in the Price Schedule) shall be included in an appropriate unit price item or in a lump-sum item.

D. Comply with the requirements pertaining to the restoration of all surfaces, which may or may not be paid for under a separate unit price item, and which shall be restored to a condition equal to or better than that existed prior to work starting under this contract.

1.02 MEASUREMENT REQUIREMENTS

A. All required measurements shall be made by the Contractor with the Architect/Engineer.

B. Any measurements not witnessed by Architect/Engineer and which cannot be verified or substantiated by Architect/Engineer will not be approved and payment under the item(s) requiring such measurements will not be made.

C. Coordinate measurements monthly, for the preparation of periodic pay estimates.

D. Where payments will be made for removing rock and existing materials, notify Architect/Engineer so that he may witness the measurements.
   1. All materials removed without conforming to the above procedures, which Architect/Engineer cannot verify or substantiate, will not be paid for.
   2. Maintain complete, neat, clean, and legible field notes for all measured items.
   3. Notes shall contain spaces for Contractor’s and Architect/Engineer’s signatures plus additional space for comments.
   4. An original and a carbon copy shall be made for all notes and one copy shall be turned over to Architect/Engineer daily.
   5. The Architect/Engineer’s signature shall not be constituted as an acceptance of the work, or the measurements made, but shall mean that he was present when the measurements were made.

1.03 SUBMITTALS

A. Field notes of all measurements for payment purposes delivered to Architect/Engineer daily.

B. Copies of all invoices required for payments out of cash allowance(s).

C. Monthly Applications for Payment.

D. Record Drawings showing the locations and quantities of all items measured for payment purposes.

1.04 SCHEDULING

A. Notify Architect/Engineer, as far in advance as possible, of the recording of measurements so that a representative of the Architect/Engineer may observe existing conditions, work being performed, and measurements being made.

B. Allow for and afford Architect/Engineer ample time, space, and equipment to observe measurements and to verify measurements and elevations.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide all labor, materials, facilities, levels, measuring devices and all other equipment and items necessary to properly and accurately perform all measurements for payment purposes.

B. Payment for certain items not specifically listed in the bid forms but otherwise required by the technical specifications shall be deemed included as part of the General Conditions and the individual unit price and lump sum bid items provided for in the proposal.

PART 3 - EXECUTION

3.01 GENERAL

A. Perform all measuring required under this Section.

B. Record all measurements and calculated quantities on the Record Drawings.

C. No measurement shall be made for work performed within the limits of Lump Sum Items.

D. Unit of Measurement: per cubic yard of rock removal measured in place.

ITEM NO.	ITEM DESCRIPTION
CU-1	Provide all labor, materials and equipment to excavate/remove rock encountered and replace with compacted structural fill, to be used as an add or deduct from allocation of the Bid Allowance for Rock Removal. Unit of Measurement: per cubic yard of rock removal measured in place.
GU-1	Provide all labor, materials and equipment to excavate/remove rock encountered and replace with compacted structural fill, to be used as an add or deduct from allocation of the Bid Allowance for Rock Removal. Unit of Measurement: per cubic yard of rock removal measured in place.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Codes

B. Governing agencies

C. Permits

1.02 CODES

A. Comply with the requirements of the various codes referred to in these Specifications. Such codes shall be the date of the latest revision in effect at the time of receiving bids.

B. If there is a conflict between local, state, and/or Federal regulatory requirements, seek a consultation with the State Department of Labor. Resolve conflicts to the satisfaction of the State Department of Labor prior to commencing work.

C. Electrical Work: Conform to the requirements of the National Electrical Code (NEC) unless otherwise shown or specified. The Owner will be the sole judge of the interpretation of these rules and requirements.

D. Elevator Work; conform to:
   1. American National Standard Safety Code for Elevators, Dumbwaiters, and Escalators as approved by American Standards Association, referred to herein as ANSI Code.
   2. Industrial Code Bulletin No. 8 as adopted by the State Industrial Board, State of New York, Department of Labor, Board of Standards and Appeals. Submission of plans and specifications, and request for elevator tests to the Department of Labor and the issuance of a certificate of approval from the Department of Labor will not be required.
   3. In event of conflict between American National Safety Code and New York State Code Bulletin 8, the more rigid requirements shall apply as interpreted by the State.

1.03 GOVERNING AGENCIES

A. All work shall conform to and be performed in strict accordance with all governing agencies such as, but not limited to:
   1. Occupational Safety and Health Act - OSHA
   2. State Department of Environmental Conservation
   3. State Building Code
   4. State Fire Code
   5. National Fire Protection Association - NFPA
   6. National Electrical Code
   7. State Plumbing Code
   8. New York State Energy Conservation Construction Code
   9. County Department of Health
   10. Town Codes, Rules, Laws and Ordinances
   11. Sewer District Sewer Use Code
   12. Local Water District
   13. Electric Utility
   14. Gas Utility
   15. State Education Department

1.04 PERMITS AND INSPECTIONS

A. Representatives of the Owner shall have access to the work for inspection purposes. The Contractor shall provide facilities suitable to the Owner to facilitate inspections of the installed work.

B. Obtain and pay for all permits, fees, licenses, certificates, inspections and other use charges required in connection with the work.

C. Comply with provisions and actions included in the Stormwater Pollution Prevention Plan (SWPPP) that has been prepared by the Architect/Engineer for the project, in regard to erosion and sediment control and pollution prevention of surface waters. The SWPPP is available for review at the Architect/Engineer's office. Note: SWPPP Report is attached as an Appendix to this Manual.

D. Obtain a New York Board of Fire Underwriters inspection and certificate.

1.05 NOISE CONTROL

A. Control noise in accordance with Town and OSHA requirements.

B. Operations which may generate objectionable noise shall be limited to between the hours of 8:00 a.m. to 4:30 p.m. on weekdays.

1.06 LISTINGS

A. Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark. Alternately, ETL Testing Laboratories, Inc. Product Safety Testing Listing is acceptable if the listed product has been tested to the applicable UL Standard.

1.07 FIRE RESISTANT CONSTRUCTION MATERIALS AND ASSEMBLIES

A. Conform to the fire rating classifications based upon the test methods and acceptance criteria in the Standard, Fire Tests of Building Construction and Materials for which Underwriters' Laboratories, Inc. (UL) provides listings.

B. Materials and assemblies shall comply with the acceptance criteria, detailed description of the assembly, its performance in the fire test and other pertinent details such as specification of materials, Classification coverage, and alternate assembly details.

C. Alternatively, fire resistance rating classifications by other issuing organizations listed in the Fire and Building Codes are acceptable.

1.08 COORDINATION WITH ELECTRIC UTILITY COMPANY

A. Comply with the utility company requirements for the incoming electric service.
   1. Pay the utility company's charges in connection with the installation of the incoming service.

1.09 COORDINATION WITH GAS UTILITY COMPANY

A. Comply with the gas utility company requirements including inspection for the incoming gas service.

1. Pay the utility company's charges in connection with the installation and inspection of the incoming service.

1.10 UTILITY WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY

A. Utility Work, either overhead or underground, within the boundaries of the state highway right-of-way, shall conform with procedures set forth in the Department of Transportation publications "Department Rules and Regulations Governing the Accommodation of Utilities Within State Highway Right-of-Way (Part 131 - Title 17 Transportation) and "Issuance of Highway Work Permits" (Code 7.12-2).

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Limestone adhered veneer (units size thickness ranging from a minimum ¼ inch (6mm) up to a maximum 2-5/8 inches (65mm) in accordance with IBC – Chapter 14 Exterior Walls or applicable local building codes for thin adhered masonry veneer), veneer installation materials and accessories.

1.02 SECTION INCLUDES

A. Thin Adhered dolomitic limestone veneer at exterior walls.

B. Metal anchors and supports.

C. Sealing exterior joints.

D. Air and Water Barriers

1.03 REFERENCE STANDARDS

A. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2019.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

C. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

D. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022.

E. ASTM C473 - Standard Test Methods for Physical Testing of Gypsum Panel Products; 2019.

F. ASTM C568/C568M - Standard Specification for Limestone Dimension Stone; 2022.

G. ASTM D2394 - Standard Test Methods for Simulated Service Testing of Wood and Wood-Based Finish Flooring; 2017.

1.04 SUBMITTALS

A. See Section 013300 - SUBMITTALS, for submittal procedures.

B. Product Data: Provide data on stone, mortar products, and sealant products.

C. Shop Drawings: Indicate layout, pertinent dimensions, anchorages, head, jamb, and sill opening details, and jointing methods.

D. Samples: Submit three (3) stone samples 3 inches by 3 inches in size, illustrating color range and texture, markings, surface finish, and sheen.

E. Installation Instructions: Submit stone fabricator's installation instructions and field erection or setting drawings; indicate panel identifying marks and locations on setting drawings.

F. Submit sample of installation system demonstrating compatibility/functional relationships between air barriers, waterproofing membranes, adhesives, mortars pointing mortars and other components under provision of Section 013300 - SUBMITTALS.

G. Stone Fabricator's Qualification Statement.

H. Installer's Qualification Statement.

I. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.05 QUALITY ASSURANCE

A. Adhered Masonry Veneer (single source responsibility): Company specializing in adhered masonry veneer, trim units with Five (5) years minimum experience. Obtain adhered masonry veneer from a single source with resources to provide products of consistent quality in appearance and physical properties.

B. Installation System Manufacturer (single source responsibility): Company specializing in air barriers, waterproofing membranes, adhesives, mortars pointing mortars and other installation materials with ten (10) years minimum experience and ISO 9001 certification. Obtain installation materials from single source manufacturer to insure consistent quality and full compatibility.

C. Submit positive laboratory testing to confirm applicability of air barrier, waterproofing membranes, adhesives, mortars pointing mortars, and other installation materials for specified job conditions.

D. Installer qualifications: company specializing in installation of adhered masonry veneer and trim units with five (5) years documented experience with installations of similar scope, materials and design.

1.06 MOCK-UP

A. Construct stone wall mock-up of each type/style/finish/size/color of adhered masonry veneer and trim unit, including stone adhesives, anchors, accessories, sill and head flashings, window frame, corner condition, typical control joint, and pointing / tooling of joints..

B. See Section 014500 - QUALITY CONTROL for additional requirements.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver Limestone units in protective film. Prevent damage to units.

B. Lift skids with proper and sufficiently long slings or forks with protection to prevent damage to units. Protect edges and corners.

C. Store units in a manner designed to prevent damage and staining of units.

D. Stack units on timbers or platforms at least 3 inches above grade.

E. Place polyethylene or other plastic film between wood and other finished surfaces of units when stored for extended periods of time.

F. Cover stored units with protective enclosure if exposed to weather.

G. Do not use salt or calcium-chloride to remove ice from masonry surfaces.

H. Store adhered masonry veneer and installation system materials in a dry location; handle in a manner to prevent chipping, breakage, and contamination.

I. Protect latex additives, liquid air barriers, waterproofing membranes, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.

J. Store portland cement mortars and pointing mortars in a dry location.

1.08 FIELD CONDITIONS

A. Provide ventilation and protection of environment as recommended by manufacturer.

B. Prevent carbon dioxide damage to adhered masonry veneer, trim, as well as adhesives, liquid air and water barrier ,mortars, pointing mortars and other installation materials, by venting temporary heaters to the exterior.

C. Maintain ambient temperatures not less than 37ºF (3ºC) or more than 100ºF (38ºC) during installation and for a minimum of seven (7) days after completion. Setting of portland cement is retarded by low temperatures.
   1. Protect work for extended period of time and from damage by other trades.
   2. Epoxy mortars and epoxy pointing mortars require surface temperatures between 60ºF (16ºC) and 90ºF (32ºC) at time of installation.
   3. Liquid air barrier and waterproofing Membranes require surface temperatures between 50ºF (10ºC) and 90ºF (32ºC). It is the General Contractor’s responsibility to maintain temperature control.

D. During temporary storage on site, at the end of working day, and during rainy weather, cover stone work exposed to weather with non-staining waterproof coverings, securely anchored.

1.09 SEQUENCING AND SCHEDULING

A. Coordinate installation of adhered masonry veneer work with related work.

B. Proceed with adhered masonry veneer work only after curbs, vents, drains, piping, and other projections through substrate have been installed .

1.10 WARRANTY

A. Thin Adhered Limestone installed over Concrete or Concrete masonry unit substrate:
   1. The Contractor warrants the work of this Section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of twenty-five (25) years. The manufacturer of adhesives, liquid air and water barrier, mortars, pointing mortars and other installation materials shall provide a written twenty-five (25) year warranty, which covers materials and labor.

1.11 MAINTENANCE MATERIALS

A. Extra stock is to be from same production run or batch as original adhered masonry veneer and installation materials.

B. Upon completion of the work of this Section, deliver to the Owner 2% minimum additional adhered masonry veneer and trim shapes or a minimum of 2 additional pieces of each type, color, pattern and size used in the Work, as well as extra stock of adhesives, mortars, pointing mortars and other installation materials for the Owner's use in replacement and maintenance.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers of Limestone units having Products considered acceptable for use:
   1. Arriscraft International , as distributed by [Consolidated Brick]].[646,708.7222 - Rocco Maggio]; Adair® Limestone Marble.
   2. Architect approved equivalent.
   3. See Section 012500 - PRODUCT SUBSTITUTION PROCEDURES.

B. Manufacturers of Adhered Masonry Veneer Installation Materials and Accessories having Products considered acceptable for use:
   1. Laticrete International.
   2. Architect approved equivalent.
   3. See Section 012500 - PRODUCT SUBSTITUTION PROCEDURES.

2.02 ADHERED MASONRY VENEER MATERIALS

A. Dolomitic Limestone: ASTM C568/C568M, Category III - High-Density: >2,560 kg/m3; special shapes as indicated; having the following typical average properties when tested to the identified standard

1.	Compressive Strength:	158 MPa, to ASTM C170.
2.	Absorption:	0.75 percent, to ASTM C97.
3.	Density:	2,675 kg/m3, to ASTM C97.
4.	Modulus of Rupture:	15.5 MPa, to ASTM C99.
5.	Flexural Strength:	11.0 MPa, to ASTM C880.
6.	Abrasion Resistance:	18.0 to ASTM C241.

2.03 FABRICATED UNITS

A. Stone Panels: dolomitic limestone panels, as described below:
   1. Bed Thickness: 1 inch thick;
   2. Panel Sizes: modular sizes as indicated or scheduled on the drawings.
   3. Finish: As indicated on the drawings Provide finish on exposed faces and ends.
   4. Color: as selected by the Architect.
   5. Pattern: as selected by the Architect.

B. Sills and Trim: Dolomitic limestone units, sizes and profiles as indicated on Drawings.
   1. Finish: As indicated on the drawings. Provide finish on exposed faces and ends.
   2. Color: as selected by the Architect .
   3. Pattern: as selected by the Architect.

2.04 CEMENT BOARD

A. Backer Board: Cementitious, water durable, board; surfaced with fiberglass reinforcing mesh on front and back; long edges wrapped; and complying with ANSI A118.9 and ASTM C1325. (PermaBase BRAND Cement Board or Architect approved equivalent).
   1. Thickness: 5/8 inch.
   2. Width: 2 feet- 8 inches, 3 feet, and 4 feet.
   3. Length: 4 feet, 6 feet, and 8 feet.
   4. Edges: Tapered.
   5. Compressive Strength: Not less than 2250 lbs. per sq. in. when tested in accordance with ASTM D2394.
   6. Water Absorption: Not greater than 8 percent when tested for 24 hours in accordance with ASTM C473.

B. Fasteners:
   1. Screws (for wood or 22 gauge or lighter gauge steel framing): Hi-Lo thread screws (No. 8) wafer head, corrosion-resistant, 1 1/4 inches, 1 5/8 inches, and 2 1/4 inches in length, and complying with ASTM C1002.
   2. Screws (for steel framing heavier than 22 gauge): Drill point screws (No. 8) wafer head, corrosion-resistant, 1 1/4 inches, 1 5/8 inches, and 2 1/4 inches in length, and complying with ASTM C1002.

C. Joint Treatment:
   1. Tape: Alkali-resistant fiberglass mesh tape intended for use with cement board.

D. Bonding Materials:
   1. Mortar: Latex-portland cement mortar in accordance with ANSI A118.4.

2.05 ADHERED MASONRY VENEER INSTALLATION MATERIALS AND ACCESSORIES

A. Air and Water Barrier Membrane: LATICRETE® Air & Water Barrier or Architect approved equivalent, to be thin, cold applied, single component liquid and load bearing. Waterproofing Membrane to be non-toxic, non-flammable, and non-hazardous during storage, mixing, application and when cured:

1.	Air Barrier Test (AC 212):	Pass
2.	Air Permeance (ASTM E2178):	Pass
3.	Elongation @ break (ASTM D751):	20-30%
4.	7 day Tensile Strength (ANSI A118.10):	>265 psi (1.8 MPa)
5.	7 day Shear Bond Strength (ANSI A118.10)	>200 psi (1.4 MPa)
6.	28 Day Shear Bond Strength (ANSI A118.4):	>214 psi (1.48 – 2.4 MPa)
7.	Service Rating (TCA/ASTM C627):	Extra Heavy
8.	Total VOC Content:	< 0.05 mg/m3

B. Epoxy Waterproofing Flashing Mortar: LATAPOXY® Waterproof Flashing Mortar or Architect approved equivalent, to be 3 component epoxy, trowel applied specifically designed to be used under adhered masonry veneer:

1.	Breaking Strength (ANSI A118.10):	450-530 psi (3.1-3.6 MPa)
2.	Waterproofing Capability (ANSI A118.10):	No Water penetration
3.	7 day Shear Bond Strength (ANSI A118.10):	110-150 psi (0.8-1 MPa)
4.	28 Day Shear Bond Strength (ANSI A118.10):	90-120 psi (0.6–0.83 MPa)
5.	12 Week Shear Bond Strength (ANSI A118.10):	110-130 psi (0.8-0.9 MPa)
6.	Total VOC Content:	<3.4 g/L

C. Cementitious backer board units: size, thickness and installation as specified by cement backer board manufacturer, complying with ANSI A118.9.

D. Latex-Portland Cement Mortar for leveling beds and scratch/plaster coats: LATICRETE Premium Mortar Bed to meet the following physical requirements:

1.	Compressive Strength (ANSI A118.4 Modified):	>4000 psi (27.6 MPa)
2.	Water Absorption (ANSI A118.6):	5% or less
3.	Service Rating (TCA/ASTM C627):	Extra Heavy
4.	Smoke & Flame Contribution (ASTM E84 Modified):	0
5.	Total VOC Content:	< 0.05 mg/m3

E. Latex Portland Cement Mortar: LATICRETE Hi Bond Masonry Veneer Mortar ** to be weather, frost, shock resistant, non-flammable and meet the following physical requirements:

1.	Compressive strength (ANSI A118.4):	>2500 psi (17.2 MPa)
2.	Bond strength (ANSI A118.4):	>450 psi (3.1 MPa)
3.	Smoke & Flame Contribution (ASTM E84 Modified):	0
4.	Total VOC Content:	< 0.05 mg/m3

F. Latex Portland Cement Pointing Mortar / Grout: LATICRETE Premium Masonry Pointing Mortar ** to be weather, frost and shock resistant, as well as meet the following physical requirements:

1.	Compressive Strength (ANSI A118.7):	4500 psi (31 MPa)
2.	Tensile Strength (ANSI A118.7):	>500 psi (3.45 MPa)
3.	Flexural Strength (ANSI A118.7):	>1250 psi (8.6 MPa)
4.	Water Absorption (ANSI A118.7):	< 5%
5.	Linear Shrinkage (ANSI A118.7):	< 0.05 %
6.	Smoke & Flame Contribution (ASTM E84 Modified):	0
7.	Total VOC Content:	< 0.05 mg/m3

G. Expansion and Control Joint Sealant: LATICRETE Latasil™ to be a one component, neutral cure, exterior grade silicone sealant and meet the following requirements:

1.	Tensile Strength (ASTM C794):	280 psi (1.9 MPa)
2.	Hardness (ASTM D751; Shore A):	25 (colored sealant) /15 (clear sealant)
3.	Weather Resistance (QUV Weather-ometer):	10000 hours (no change)

H. Spot Bonding Epoxy Adhesive: LATAPOXY 310 Stone Adhesive (Standard or Rapid Grade) for installing adhered masonry veneer, brick and stone over vertical surfaces shall be high strength, high temperature resistant, non-sag and shall meet the following physical requirements:

1.	Thermal Shock Resistance (ANSI A118.3):	>1000 psi (6.9 MPa)
2.	Water Absorption (ANSI A118.3):	0.1 %
3.	Compressive Strength (ANSI A118.3):	>8300 psi (57.2 MPa)
4.	Shear Bond Strength (ANSI A118.3 Modified):	>730 psi (5 MPa)

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that support work and site conditions are ready to receive work of this section.

B. Inspect materials for fit and finish prior to installation. Do not set unacceptable units.

C. Verify that items built-in under other sections are properly located and sized.

3.02 CUTTING MASONRY UNITS

A. Cut masonry units with wet-saw.

B. Pre-soak units using clean water prior to cutting.

C. Clean cut units using a stiff fibre brush and clean water. Allow units to surface dry prior to placement.

D. Finish cut edges to match face when exposed in wall.

3.03 COURSING

A. Place masonry to lines and levels indicated.

B. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.

C. Lay masonry units in bond indicated on the drawings.

D. Course one masonry unit and one mortar joint to equal 12 inches. [OR] Maintain mortar joint thickness of 3/8 inch.

E. Tool joints when thumbprint hard, to a flush finish.

3.04 FIELD QUALITY CONTROL

A. Perform inspection and testing as specified in Section 014500 - QUALITY CONTROL.

B. Inspection:
   1. Masonry will be free of cracks or other blemishes on the finished face or front edges of the masonry units exceeding 3/8 inch or that can be seen from a distance of 10 feet.
   2. Units shall exhibit a texture approximately equal to the approved sample when viewed under diffused daylight illumination at a 20 foot distance.
   3. Minor chipping resulting from shipment and delivery shall not be obvious under diffused daylight illumination from a 20 foot distance.
   4. Remove Efflorescence in accordance with the manufacturer's recommendations.

3.05 ADJUSTING AND CLEANING

A. Repair minor chips on smooth finished units in strict accordance with the manufacturer's instructions.

B. Clean one-half of the mock-up panel as directed below and leave for one week. If no harmful effects appear and mortar has set and cured, clean installed masonry as follows:
   1. Protect windows, sills, doors, trim and other work from damage.
   2. Remove large particles with stiff fiber brushes or wood paddles without damaging surfaces.
   3. Saturate masonry with clean water and flush off loose mortar and dirt.
   4. Dilute cleaning agent with clean water in controlled proportions.
   5. Apply solution to pre-soaked wall surface using soft-bristled brushes or low pressure acid-resistant sprayer.
   6. Thoroughly rinse cleaning solution and residue from wall surface.

3.06 PROTECTION

A. Protect units from damage resulting from subsequent construction operations.

B. Use protection materials and methods which will not stain or damage units.

C. Remove protection materials upon Substantial Completion, or when risk of damage is no longer present.

3.07 INSTALLATION

A. Set stone with a consistent joint width of 3/8 inch (9 mm).

3.08 TOLERANCES

A. Positioning of Elements: Maximum 1/4 inch (6 mm) from true position.

B. Maximum Variation Between Face Plane of Adjacent Panels: 1/16 inch (1.5 mm).

C. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet (3 mm/m).

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. The Work of this Section includes, but is not limited to, pre-applied sheet membrane waterproofing that forms an integral bond to poured concrete for the following applications:
   1. Horizontal Applications: Membrane applied on prepared subbase prior to placement of concrete slabs.

1.02 SUBMITTALS

A. Submit manufacturer's product data, installation instructions and membrane samples for approval.

1.03 REFERENCE STANDARDS

A. ASTM C836/C836M: Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course

B. ASTM D412: Standard Test Methods for Rubber Properties in Tension

C. ASTM D903: Standard Test Method for Peel or Stripping Strength of Adhesive Bonds

D. ASTM D1876: Standard Test Method for Peel Release of Adhesives (T-Peel)

E. ASTM D1970/D1970M: Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

F. ASTM D3767: Standard Practice for Rubber - Measurements of Dimensions

G. ASTM D5385/D5385M: Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes

H. ASTM E96/E96M: Standard Test Methods for Water Vapor Transmission of Materials

I. ASTM E154/E154M: Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

1.04 QUALITY ASSURANCE

A. Manufacturer: Sheet membrane waterproofing system shall be manufactured and marketed by a firm with a minimum of twenty (20) years experience in the production and sales of sheet membrane waterproofing. Manufacturers proposed for use but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five (5)years.

B. Installer: A firm which has at least five (5) years experience in work of the type required by this section.

C. Materials: For each type of material required for the work of this section, provide primary materials which are the products of one manufacturer.

D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of special details and flashing.

E. Schedule Coordination: Schedule work such that membrane will not be left exposed to weather for longer than that recommended by the manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's instructions. Protect from damage from weather, excessive temperature and construction operations. Remove and dispose of damaged material in accordance with applicable regulations.

1.06 PROJECT CONDITIONS

A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive sheet membrane waterproofing.

1.07 WARRANTY

A. Sheet Membrane Waterproofing: Provide written ten (10)-year Preprufe® System Watertightness Warranty issued by the membrane manufacturer upon completion.

B. Installer's Warranty
   1. Special Installer's Warranty in addition to Watertightness Warranty
   2. Provide Installer Warranty, signed by Installer, covering Work of this Section
   3. Warranty Period: two (2) years from date of System installation completion

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pre-applied Integrally Bonded HDPE Sheet Waterproofing Membrane for vertical or horizontal application: PREPRUFE® 300R Plus Membrane [or PREPRUFE 300LT Plus Membrane for application temperatures between 25°F (-4°C) and 95°F (+35°C)] by GCP Applied Technologies (Tel.: 1-866-333-3726), a 1.2mm (0.046 in) nominal thickness composite sheet membrane consisting of 0.8 mm (0.030 in.) of high density polyethylene film, a pressure-sensitive adhesive and a trafficable weather resistant coating. The membrane shall be supplied in a kick-out roll orientation and shall have no release liner to reduce waste onsite. The membrane shall form an integral and permanent bond to poured concrete to prevent water migration at the interface of the membrane and structural concrete and shall include dual adhesive ZipLap™ seam technology to complete side laps and secure adjacent sheets. Provide membrane with the following physical properties:

PHYSICAL PROPERTIES FOR PREPRUFE® 300R Plus (or 300R Plus LT) MEMBRANE:

Property	**Test Method**	**Typical Value**
Color	N/A	White
Thickness	ASTM D3767	0.046 in. (1.2 mm) nominal
Lateral Water Migration Resistance	ASTM D5385 (1)	Pass at 231 ft (71m) of hydrostatic head pressure
Low Temperature Flexibility	ASTM D1970	Unaffected at -20°F (-29°C)
Resistance to Hydrostatic Head	ASTM D5385 (2)	231 ft. (71 m)

Elongation	ASTM D412 (3)	500%
Tensile Strength, film	ASTM D412	4,000 psi (27.6 MPa)
Crack Cycling at -9.4°F (-23°C), 100 Cycles	ASTM C836	Unaffected, Pass
Puncture Resistance	ASTM E154	225 lbs (1000 N)
Environmental stress resistance	ASTM D1693	Pass
Peel Adhesion to Concrete	ASTM D903 Modified (4)	1.0 lbs/in. (1750 N/m)
Lap Peel Adhesion	ASTM D1876 (5)	10.0 lbs/in. (1750 N/m)
Lap Peel Adhesion, after immersed in underground contaminants	ASTM D 1876 (6)	Retain >80%
Shear strength of joint	ASTM D882	>100 lb.
VOC permeance	ASTM F739 (open loop)	Not Detectable
Methane permeance	ASTM D1434	<40 ml/day.m2.atm
Permeance to water vapor transmission	ASTM E 96 Method B	0.01 perms (0.6 ng/Pa x s x m2)
Roll Size		3 ft. by 102 ft, (392 sq. ft.)
Roll weight		108 lbs. (49 kg)
Minimum side/end laps		3 in. (75 mm)

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the blind side waterproofing membrane. A hydrostatic head pressure of 71 m (231 ft) of water is the limit of the apparatus.
2. Hydrostatic head tests of PREPRUFE Membranes are performed by casting concrete against the membrane with a lap.
3. Elongation of membrane is run at a rate of 50 mm (2 in.) per minute.
4. Concrete is cast against the protective coating surface of the membrane and allowed to cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 50 mm (2 in.) per minute at room temperature.
5. The test is conducted 15 minutes after the lap is formed.
6. Sample immersed under TCE, PCE, BETX and acid & alkaline solution.

2.02 ANCILLARY PRODUCTS

A. Waterstop: ADCOR® hydrophilic waterstop for joints in concrete walls and floors or DE NEEF® Injecto® Tube groutable waterstop for non-moving concrete construction joints and penetrations, by GCP Applied Technologies.

B. Tape for covering cut edges, roll ends, penetrations and detailing: PREPRUFE® Tape LT (for temperatures between 25°F (-4°C) and 95°F (35°C) and PREPRUFE® Tape HC (for use in Hot Climates, beyond 95°F (35°C))

C. PREPRUFE® CJ Tape – 8 in. wide tape for detailing, and may be used at construction joints for optional additional protection.

D. BITUTHENE® Liquid Membrane - for sealing around penetrations, etc.

E. Miscellaneous Materials: accessories specified or acceptable to manufacturer of pre-applied waterproofing membrane.

F. Miscellaneous Materials: accessories specified or acceptable to manufacturer of pre-applied waterproofing membrane.

PART 3 - EXECUTION

3.01 EXECUTION

A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 SUBSTRATE PREPARATION

A. It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability.
   1. Horizontal Surfaces - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, however, standing water must be removed.
   2. Vertical Surfaces - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

3.03 INSTALLATION, HORIZONTAL APPLICATIONS

A. Strictly comply with installation instructions in manufacturer’s published literature, including but not limited to, the following:
   1. Place the membrane HDPE film side to the substrate with the yellow zip strip facing towards the concrete pour. End laps should be staggered to avoid a build-up of layers.
   2. Leave the yellow and blue zip strips in position until overlap procedure is completed.
   3. Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. The blue zip strip on the underside of the membrane shall be positioned on top of the yellow zip strip on the top of the succeeding sheet. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap.
   4. Peel back and remove both the yellow and blue zip strips in the overlap area to achieve and adhesive to adhesive bond at the overlap.
   5. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller.

3.04 INSTALLATION, ROLL ENDS AND CUT EDGES

A. Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary.

B. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly.

C. Immediately remove printed plastic release liner from the Preprufe Tape.

3.05 WATERSTOP INSTALLATION

A. Strictly comply with installation instructions in manufacturer's published literature, including but not limited to, the following:
   1. Secure Adcor ES using masonry nails 1½ in. - 2 in. (40 mm - 50 mm) long with a washer ¾ in. (20 mm) in diameter. Hilti EM6-20-12 FP8 shot fired fixings with ¼ in. (6 mm) nuts and ¾ in. (20 mm) diameter washers may also be used. Fixings should be spaced at a maximum of 12 in. (300 mm) centers with a minimum spacing that ensures proper contact to substrate.
   2. On irregular concrete faces, or on vertical surfaces, apply a ½ in. (12 mm) bead of Adcor ES Adhesive as bedding for Adcor ES.
   3. Adcor ES joints should overlap a minimum of 4 in. (100 mm), ensuring full contact between jointed pieces.

3.06 PROTECTION

A. Protect membrane in accordance with manufacturer's recommendations until placement of concrete. Inspect for damage just prior to placement of concrete and make repairs in accordance with manufacturer's recommendations.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings, applicable provisions of the "Conditions of the Contract" and Division 01 Specification Sections apply to this section.

1.02 WORK INCLUDED

A. The work includes all labor, materials, equipment and appliances required for the complete installation of all work of this section and related work as indicated on Drawings, specified herein and as required by conditions encountered at the site, including but not limited to the following:
   1. Composite fiberglass panel system at exterior facade including but not limited to fascias, infill panels and elsewhere indicated on Drawings.

1.03 REFERENCES

A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.

B. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010 (Reapproved 2018).

C. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.

D. ASTM D6638 - Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks); 2018.

E. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between - 30 C and 30 C with a Vitreous Silica Dilatometer; 2016.

F. ASTM D785 - Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials; 2008 (Reapproved 2015).

G. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.

H. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement; 2020.

I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

1.04 PERFORMANCE / DESIGN REQUIREMENTS

A. General Performance: Exterior Composite fiberglass panel system shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Structural Performance: Exterior Composite fiberglass panel system shall withstand the effects the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E330/E330M.

1. Panels shall be designed to withstand the Design Wind Load based upon the Basic Wind Speed of 120 miles per hour (mph), but in no case less than 15 pounds per square foot (psf). Wind load testing shall be done in accordance with this listed standard.
2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.

C. System design to be performed by qualified professional engineer licensed in State of New York.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide products by a manufacturer with experience completing at least five projects of the size, scope and quality required by this project within the last five (5) years. Provide all composite architectural panels by a single manufacturer.

B. Installer Qualifications: Not less than three (3) years of successful experience in completing exterior cladding systems similar in material and scope to this project.
1. Approved by composite stone wall panel manufacturer.

C. Mock-Up: Provide a mock-up for evaluation of installation techniques and finished appearance.
1. Finish areas designated by Architect/Engineer.
2. Do not proceed with remaining work until workmanship and overall appearance are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.
4. Approved mock-up may be incorporated into the completed work.

1.06 SUBMITTALS

A. Submit under provisions of Section 013300 - SUBMITTALS.

B. Product Data: Manufacturer’s data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Include elevations and detail sections of installation. Include cutting and setting drawings indicating sizes, dimensions, sections, and profiles of panels; arrangements and provisions for jointing, supporting, anchoring, and bonding panels; and details showing relationship with, attachment to, and reception of related work. Include large-scale details of each system component, anchorage, and fastening device.

D. Engineering Calculations: Submit engineering calculations that bear the stamp of a Professional Engineer licensed in the State of New York indicating compliance with specified performance criteria including thermal movement and fastener pull-out calculations showing that the installed panels and attachments system meets the wind load requirements for the project. Indicate fastener types and spacing.

E. Selection Samples: Architect/Engineer selection from full range of color and texture combinations.

F. Verification Samples: For each panel specified, two samples, minimum size 6 inches square,
1. representing actual product, color and patterns.

1.07 PRE-INSTALLATION MEETING

A. For all installation systems, convene meeting to review manufacturer’s recommended procedure no less than one week before panel installation is scheduled to begin. Assure attendance by representatives of the Owner's Construction Representative, Architect, Contractor, Installer, and Manufacturer's Field Representative.

1.08 DELIVERY, STORAGE AND HANDLING

A. Deliver panels in crates on wood pallets, interwoven with protective paper and wrapped in plastic sheets.

B. Store panels flat in original shipping crates or on wood pallets under protective cover until needed for installation. Ventilate coverings to avoid condensation. Elevate above grade on level blocking to avoid standing water.

C. Protect panels from scuffing during handling. Apply manufacturer’s recommended remedial treatment immediately if panels are soiled or scratched or replace panels which can not be restored to the Architect's satisfaction.

D. Carry panels on edge and handle carefully to avoid damage to surfaces and corner.

1.09 WARRANTY/GUARANTEE

A. Manufacturer shall warrant panel to be free from delamination, cracking, crazing or peeling and for structural integrity for twenty (20) years from date of acceptance of the work.

B. Contractor shall warrant and guarantee that all work done and materials installed shall remain free from defects of any kind for a period of two (2) years from date of acceptance of the work.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Acceptable Manufacturer of Petrarch Architectural Panels: Omnis Panels, Inc; 1717 N. Naper Blvd., Suite 100; Naperville, IL 60563. ASD. Tel: (800) 450-6099 or (630) 355-4040. Fax: (630) 355-4995. Email: info@omnis-panels.com. Website: www.omnispanels.com.

B. Architect approved equivalent.

C. Requests for substitutions will be considered in accordance with provisions of Section 012500 - PRODUCT SUBSTITUTION PROCEDURES

2.02 COMPOSITE FIBERGLASS PANELS

A. Petrarch Panels: 7/16 inch thick composite sheets comprising natural slate and/or stone granules or powder and/or calcium carbonate granules or powder, polyester resin, glass fiber, pigments, and fire retardant, with homogeneous color throughout.
   1. Weight: 4.5 lb/sq ft.
   2. Texture: Riven Slate, Riven Matt, and Smooth Matt
   3. Color: as selected by the Architect from the manufacturer's full color offering..
   4. Width: 47-3/4 inches.
   5. Length: 95-3/4 inches.
   6. Length: 119-3/4 inches.
   7. Density: 2.27, per ASTM D 792.

8. Modulus of Rupture: 5,690 psi (39.2 MPa), when tested in accordance with ASTM D790.
9. Tensile Strength: 2960 psi (20.4 MPa), when tested in accordance with ASTM D638.
10. Thermal Conductivity: 5.822 BTU-in/hr sq ft (120.8 W/m K), when tested in accordance with ASTM C177
11. Izod Impact: 0.43 ft-lb/in (0.008 J/m) of notch, when tested in accordance with ASTM D256.
12. Hardness Barcol: 64, when tested in accordance with ASTM D785
13. Flame Spread: 15, when tested in accordance with ASTM E84.
14. Fuel Contribution: 0, when tested in accordance with ASTM E84.
15. Moisture Absorption: Maximum 0.2 percent by weight after 24 hours of immersion.
16. Biological Resistance: Immune to insect and vermin attack; inhibits mold growth.
17. Chemical Resistance: Impervious to most acid and organic solvents.

B. Manufacturing Tolerances:
   1. Sheet size tolerance: Plus or minus 1/8 inch
   2. Thickness tolerance: Plus or minus 1/16 inch

2.03 SETTING SYSTEMS:

A. Structural Silicone Setting System:
   1. Aluminum Bearing Plates: 80% recycled 6063-T5 alloy, 0.125 in thickness, Clear Anodized.
   2. Bearing Plate Fasteners: No. 8 x 1-1/2 inch, pan head, Stainless Steel screws.
   3. Structural Silicone: One-component structural silicone glazing sealant: SikaTack Panel 50 by Sika Corporation or type otherwise recommended by the composite stone panel manufacturer.
   4. Cellular Foam Tape: Norton V2100 Series Thermal bond, P2106 Black, 3/16 inch by 1/2 inch or type and size otherwise recommended by the composite stone panel manufacturer.
   5. Adhesion Promoter: Norton Tite-R-Bond (2287) or Type otherwise recommended by the composite stone panel manufacturer.
   6. Setting Blocks: Silicone, 80-90 Shore A durometer, 1/8 inch by 11/32 inch by 4 inches or size otherwise recommended by the stone panel manufacturer.

B. DCS031 Helping Hand Bracket System
   1. Description: adjustable aluminum subframe system comprising of L and T carrier rails and wall brackets which are fixed directly back to the substrate.
   2. Material: aluminum alloy minimum grade of 6063 T6 except for 310F to 400F Folded Double Brackets which are manufactured from minimum grade of 5251/H22 appropriate for rainscreen cladding support / construction.
   3. System depth: ranging from 49mm (1 15/16 inches) to 442mm (17 3/8 inches). Thermal pad not factored in.
   4. Components:
      a. Single Helping Hand Bracket – 40mm (1 9/16 inches) (width) x 88mm (3 7/16 inches) (height) x Projection (varies). Nominal 3mm (1/8 inch) aluminum thickness.
         1) Projections available – 40,45,50,60,70,100,130,160,190,220,250,280mm
      b. Double Helping Hand Bracket – 40mm (1 9/16 inches) (width) x 150mm (5 7/8 inches) (height) x Projection (varies). Nominal 3mm (?”) aluminum thickness.
         1) Projections available –70,100,130,160,190,220,250,280,310,340,370,400mm
      c. Single and Double brackets supplied with pre-punched holes for fastening back to stud frame and slots for fastening back to concrete/masonry. To fasten vertical carrier rails, helping hand brackets are supplied with holes (fix point bracket / dead load) and slots (sliding point / wind restraint) for easy engagement and placement of stainless-steel self-drilling screws.
      d. L Rail – 40x60mm (1 9/16 inches x 2 3/8 inches). Nominal 2mm (5/64 inch) aluminum thickness.

e. T Rail – 100x60mm (3 15/16 inches x 2 3/8 inches) and 125x60/40mm (4 15/16 inches x 2 3/8 inches /1 9/16 inches). Nominal 2mm (5/64 inch) aluminum thickness.
f. Carrier rails are available in 3m (118 1/8 inches) and 6m (239 ¼ inches).

5. Fasteners:
   a. Suitable primary fixings to substrate dictated by project specific structural calculations.
   b. S/S 4.8x19mm TEK Screw for fastening rail to helping hand bracket.
6. Thermal Break: 5mm (13/64 inch) pre-punched Downer Isolator Pad supplied separately.

2.04 ACCESSORIES:

A. Weather Sealant: Silicone or Polyurethane sealant and bond breaker tape as specified in Section 079200 - JOINT SEALANTS.

2.05 FABRICATION

A. Provide factory fabricated panels to the maximum extent possible, conforming to the following:
   1. Cut to custom sizes from manufacturer's standard sizes
   2. Pre-drill and countersink fastener holes
   3. Prepare special shapes and cutouts
   4. Polish, bevel, or miter edges, as required by the design intent.
   5. Prefabricate inside and outside corners
   6. Prepare inserts and brackets for back fastening system
   7. Bond insulating materials to panels
   8. Engrave as required

B. Perform shop or site cutting using a saw equipped with a dry cut, diamond tipped blade. If using a portable or table saw, place finished side up. If using a moveable, portable skill saw, place finished side down. Clamp to saw bed before cutting. Remove sawdust from panel surface immediately.

C. If on-site drilling or countersinking is required, drill panels with a portable hand-held pistol drill equipped with a drill guide to assure 90 degree holes and a masonry drill bit suitable for drilling at speeds of 900 to 1200 rpm. Remove any sawdust from panel surface immediately.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Measure areas of installation prior to fabrication, to minimize out of square or unbalanced border conditions.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Proceed with panel installation only when substrate is completely dry.

3.03 INSTALLATION

A. Install in strict accordance with manufacturer's instructions. Make adequate provisions for thermal and structural movement.

B. Structural Silicone Setting System:
   1. Fasten aluminum bearing plates through sheathing directly to load bearing studs.
   2. Apply continuous strips of double-faced, cellular foam tape as spacers and temporary
   3. adhesive.
   4. Apply beads of structural silicone in a one-panel area, place panel on setting blocks at base,
   5. press panel into final position, and block in place until silicone achieves full cure.
   6. Install weatherproofing joint sealer in accordance with requirements of Section 079200 - JOINT SEALANTS.

3.04 CLEANING AND PROTECTION

A. Clean all panels of dirt, adhesive, and joint sealers, using detergents or solvents as appropriate and as recommended by the manufacturer.

B. Remove and replace any damaged panels and those that cannot be adequately cleaned.

C. Protect installed products until completion of project.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Automatic self closing security service window.

1.02 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

D. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017.

E. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate work with adjacent materials specified in other sections and as indicated on drawings and approved shop drawings.

B. Preinstallation Meeting: Prior to start of installation arrange a meeting on site to familiarize installer and installers of related work with requirements relating to this work.

1.04 SUBMITTALS

A. See Section 013300 - SUBMITTALS, for submittal procedures.

B. Product Data: Submit manufacturer's product data for specified products indicating materials, operation, glazing, finishes, and installation instructions.

C. Shop Drawings: Indicate configuration, sizes, rough-in, mounting, anchors and fasteners, and installation clearances.

D. Test Data: Test reports for specific window model and glazing to be furnished, showing compliance with all specified requirements; window and glazing may be tested separately, provided window test sample adequately simulates the glazing to be used.

E. Samples for Selection of Finishes:
   1. Applied Finishes: Color charts for factory finishes.

F. Manufacturer Qualification Statement.

G. Installer Qualification Statement.

H. Testing Agency Qualification Statement.

I. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least ten years documented experience, and with ability to provide test reports showing that their standard manufactured products meet the specified requirements.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Testing Agency Qualifications: Independent testing agency with documented experience in conducting tests of the type specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver units in manufacturer's original packaging and unopened containers with identification labels intact.

B. Store units in area protected from exposure to weather and vandalism.

1.07 WARRANTY

A. See Section 017800 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Provide manufacturer's warranty agreeing to repair or replace units and their components that fail in materials or workmanship within two years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SERVICE WINDOW UNITS WITH PASS-THROUGH DEVICE

A. Manufacturer
   1. C.R. Laurence, Inc.
   2. Architect approved equivalent.

B. Location: Built within interior wall, as indicated on drawings.

C. Type of Use: As indicated on drawings.

D. Window Type: Exchange Window.
   1. Operation: Self-closing manual.
   2. Overall Window Frame Size: As indicated on drawings.
   3. Frame Material: Aluminum.
      a. Finish: Custom kynar color.

E. Glazing: Safety rated laminated glass, clear, and safety film.
   1. Thickness: 1/2 inch glass safety lmainated glass, 8 mil safety rated film (3M S80 or approved equal)

F. Products:
   1. US Aluminum CRL Model: SCDW1804.
   2. Architect approved equivalent.

2.02 COMPONENTS

A. Windows: Factory-fabricated, finished, and glazed, with extruded aluminum frame and glazing stops; complete with hardware and anchors.
   1. Provide window units that are re-glazable from the secure side without dismantling the non-secure side of framing.
   2. Rigidly fit and secure joints and corners with internal reinforcement. Make joints and connections flush, hairline, and weatherproof. Fully weld corners.
   3. Apply factory finish to all exposed surfaces.
   4. Apply bituminous paint to concealed metal surfaces in contact with cementitious or dissimilar materials.
   5. Self-Closing Operation: Manual open and self-closing with auto-locking handles and magnetic hold-open device.
   6. Configuration: As indicated on the drawings.

2.03 MATERIALS

A. Aluminum Extrusions: Minimum 1/8 inch (3.2 mm) thick frame and sash material complying with ASTM B221 and ASTM B221M.
   1. Mill Finished Aluminum Surfaces: Custom kynar color.
   2. Finish: Class I natural anodized.

B. Stainless Steel: Type 304 with No. 4 - Brushed finish.

C. Safety Security Film: Silicone is applied to the security film, one faces; complying with performance level indicated.
   1. Film: 8 Mil Level 3 (3M S80 or approved equal

D. Full weather proof/ smoke proof poly-pile seals. Seals shall meet required smoke development of 0-450.

E. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.04 FINISHES

A. Color: Custom Kyrar Finish: AAMA2605. Primer coat, color coat, clear topcoat not less thin 1.5 mils (0.04064 mm) thick.

2.05 ACCESSORIES

A. Shelves: Stainless steel, 16 gage, 0.0625 inch (1.59 mm) minimum thickness, wall mounted units. Depth of Shelf: 12 inches by full width of opening.

B. Hardware and Security Devices for Sliding Windows:
   1. Auto-Lock Handle: Stainless steel auto-locking handle on all self-closing sliders to prevent intrusion.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that window openings are ready for installation of windows.

B. Verify that correct embedded anchors are in place and in proper location; repair or replace anchors as required to achieve satisfactory installation.

C. Notify Architect/Engineer if conditions are not suitable for installation of units; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install units in correct orientation (inside/outside or secure/non-secure).

C. Anchor units securely in manner so as to achieve performance specified.

D. Full weather proof poly-pile seals.

E. Remove and replace defective work.

3.03 ADJUSTING

A. Adjust operating components for smooth operation while also maintaining a secure, weather-tight enclosure and a tight fit at the contact points; lubricate operating hardware.

3.04 CLEANING

A. Remove protective material from factory finished surfaces.

B. Clean exposed surfaces promptly after installation without damaging finishes.

3.05 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain operable units.
   1. Instructor: Manufacturer's training personnel.
   2. Location: At project site.
   3. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

3.06 PROTECTION

A. Provide temporary protection to ensure that service and teller windows are without damage upon Date of Substantial Completion.

END OF SECTION

GENERAL

1.01 SUMMARY

A. Section includes:
   1. Mechanical and electrified door hardware
   2. Electronic access control system components

B. Section excludes:
   1. Windows
   2. Cabinets (casework), including locks in cabinets
   3. Signage
   4. Toilet accessories
   5. Overhead doors

C. Related Sections:
   1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
   2. Division 06 Section "Rough Carpentry"
   3. Division 06 Section "Finish Carpentry"
   4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
   5. Division 08 Sections:
      a. "Metal Doors and Frames"
      b. "Flush Wood Doors"
      c. "Stile and Rail Wood Doors"
      d. "Interior Aluminum Doors and Frames"
      e. "Aluminum-Framed Entrances and Storefronts"
      f. "Special Function Doors"
   6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
   7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC
   1. UL 10B - Fire Test of Door Assemblies
   2. UL 10C - Positive Pressure Test of Fire Door Assemblies
   3. UL 1784 - Air Leakage Tests of Door Assemblies
   4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute
   1. Sequence and Format for the Hardware Schedule
   2. Recommended Locations for Builders Hardware
   3. Keying Systems and Nomenclature
   4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association
   1. NFPA 70 – National Electric Code
   2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
   3. NFPA 101 – Life Safety Code
   4. NFPA 105 – Smoke and Draft Control Door Assemblies
   5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute
   1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
   2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
   3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
   4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
   5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:
   1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
   2. Prior to forwarding submittal:
      a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
      b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:
   1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
   2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
      a. Wiring Diagrams: For power, signal, and control wiring and including:
         1) Details of interface of electrified door hardware and building safety and security systems.
         2) Schematic diagram of systems that interface with electrified door hardware.
         3) Point-to-point wiring.
         4) Risers.
   3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
      a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
   4. Door Hardware Schedule:
      a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
      b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
      c. Indicate complete designations of each item required for each opening, include:
         1) Door Index: door number, heading number, and Architect's hardware set number.
         2) Quantity, type, style, function, size, and finish of each hardware item.
         3) Name and manufacturer of each item.
         4) Fastenings and other pertinent information.
         5) Location of each hardware set cross-referenced to indications on Drawings.
         6) Explanation of all abbreviations, symbols, and codes contained in schedule.

7) Mounting locations for hardware.
8) Door and frame sizes and materials.
9) Degree of door swing and handing.
10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.

5. Key Schedule:
   a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
   b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
   c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
   d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
   e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
   f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:
   1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
   2. Provide Product Data:
      a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
      b. Include warranties for specified door hardware.

D. Closeout Submittals:
   1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
      a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
      b. Catalog pages for each product.
      c. Final approved hardware schedule edited to reflect conditions as installed.
      d. Final keying schedule
      e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
      f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:
   1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
      a. Fire door assemblies, in compliance with NFPA 80.
      b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:
   1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with

a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.

2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
   a. For door hardware: DHI certified AHC or DHC.
   b. Can provide installation and technical data to Architect and other related subcontractors.
   c. Can inspect and verify components are in working order upon completion of installation.
   d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:
   1. Fire-Rated Door Openings:
      a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
      b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
   2. Smoke and Draft Control Door Assemblies:
      a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
      b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
   3. Electrified Door Hardware
      a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
   4. Accessibility Requirements:
      a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings
   1. Keying Conference
      a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
         1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
         2) Preliminary key system schematic diagram.
         3) Requirements for key control system.
         4) Requirements for access control.
         5) Address for delivery of keys.
   2. Pre-installation Conference

a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Inspect and discuss preparatory work performed by other trades.
c. Inspect and discuss electrical roughing-in for electrified door hardware.
d. Review sequence of operation for each type of electrified door hardware.
e. Review required testing, inspecting, and certifying procedures.
f. Review questions or concerns related to proper installation and adjustment of door hardware.

3. Electrified Hardware Coordination Conference:
   a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

1.07 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
   1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.

1.08 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fabrication
1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer’s recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with “Metal Doors and Frames”, “Flush Wood Doors”, “Stile and Rail Wood Doors” to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

C. Cable and Connectors:
1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 HINGES

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. Ives 5BB series

B. Requirements:
   1. Provide hinges conforming to ANSI/BHMA A156.1.
   2. Provide five knuckle, ball bearing hinges.
   3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
      a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
      b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
   4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
      a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
      b. Interior: Heavy weight, steel, 5 inches (127 mm) high
   5. 2 inches or thicker doors:
      a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
      b. Interior: Heavy weight, steel, 5 inches (127 mm) high
   6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
   7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
   8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
      a. Steel Hinges: Steel pins
      b. Non-Ferrous Hinges: Stainless steel pins
      c. Out-Swinging Exterior Doors: Non-removable pins
      d. Out-Swinging Interior Lockable Doors: Non-removable pins
      e. Interior Non-lockable Doors: Non-rising pins
   9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.04 CONTINUOUS HINGES

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Ives

B. Requirements:
   1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
   2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
   3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
   4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
   5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
   6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
   7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:
   1. Scheduled Manufacturer and Product:
      a. Von Duprin EPT-10

B. Requirements:
   1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
   2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Ives

B. Requirements:
   1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. Schlage ND series

B. Requirements:
   1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
   2. Indicators: Where specified, provide escutcheon with lock status indicator window on top of lockset rose:
      a. Escutcheon height (including rose) 6.05 inches high by 3.68 inches wide.
      b. Indicator window measuring a minimum 3.52-inch by .60 inch with 1.92 square-inches of front facing viewing area and 180-degree visibility with a total of .236 square-inches of total viewable area.
      c. Provide snap-in serviceable window to prevent tampering. Lock must function if indicator is compromised.
      d. Provide messages color-coded with full text and symbol, as scheduled, for easy visibility.
      e. Unlocked and Unoccupied message will display on white background, and Locked and Occupied message will display on red background.
   3. Cylinders: Refer to "KEYING" article, herein.
   4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
   5. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
   6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
   7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.

8. Provide electrified options as scheduled in the hardware sets.
9. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

2.08 EXIT DEVICES

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. Von Duprin 98/35A series

B. Requirements:
   1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
   2. Cylinders: Refer to "KEYING" article, herein.
   3. Provide smooth touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
   4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
   5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
   6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
   7. Provide flush end caps for exit devices.
   8. Provide exit devices with manufacturer's approved strikes.
   9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
   10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
   11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
   12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
   13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
   14. Provide electrified options as scheduled.
   15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
   16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.
   17. Special Options:
      a. SI
         1) Provide dogging indicators for visible indication of dogging status.
      b. CX
         1) Provide delayed egress devices, where scheduled, that are UL 294 listed, meet National Fire Protection Association (NFPA) and International Building Code (IBC) governing delayed egress, and/or other local and national fire codes acceptable to authority having jurisdiction as required.
            (a) Provide non-handed and field sizable device with 3/4 (19mm) throw deadlocking latch bolt. Device incorporates an internal RX switch that detects attempt to exit from applying less than 15lbs to the push pad, which causes this switch to start an irreversible alarm cycle. Key switch in device is capable of arming, disarming, or resetting the device; and indicator lamp determines status of the device.

(b) Provide devices capable of standard 15 second release delay and indefinite release delay as required by code, when tied into fire alarm system will release immediately when an alarm condition exists.
(c) Provide devices with all control inputs – door position input, external inhibit input, fire alarm input; auxiliary locking; nuisance alarm and internal horn; and, remote signaling output self-contained in the device assembly.

c. CVC
1) Provide cable-actuated concealed vertical latch system in two-point for non-rated or fire rated wood doors up to a 90 minute rating and less bottom latch (LBL) configuration for non-rated or fire rated wood doors up to 20 minute rating. Vertical rods not permitted.
(a) Cable: Stainless steel with abrasive resistant coating. Conduit and core wire ends snap into latch and center slides without use of tools.
(b) Wood Door Prep: Maximum 1 inch x 1.1875 inch x 3.875 inches top latch pocket and 1 inch x 1.1875 inch x 5 inches bottom latch pocket which does not require the use of a metal wrap or edge for non-rated or fire rated wood doors up to a 45 minute rating.
(c) Latchbolts and Blocking Cams: Manufactured from sintered metal low carbon copper- infiltrated steel, with molybdenum disulfide low friction coating.
(d) Top Latchbolt: Minimum 0.38 inch (10 mm) and greater than 90-degree engagement with strike to prevent door and frame separation under high static load.
(e) Bottom Latchbolt: Minimum of 0.44-inch (11 mm) engagement with strike.
(f) Product Cycle Life: 1,000,000 cycles.
(g) Latch Operation: Top and bottom latch operate independently of each other. Top latch fully engages top strike even when bottom latch is compromised. Separate trigger mechanisms not permitted.
(h) Latch release does not require separate trigger mechanism.
(i) Cable and latching system characteristics:
(1) Installed independently of exit device installation, and capable of functioning on door prior to device and trim installation.
(2) Connected to exit device at single point in steel and aluminum doors, and two points for top and bottom latches in wood doors.
(3) Bottom latch height adjusted, from single point for steel and aluminum doors and two points for wood doors, after system is installed and connected to exit device, while door is hanging
(4) Bottom latch position altered up and down minimum of 2 inches (51 mm) in steel and aluminum doors without additional adjustment. Bottom latch deadlocks in every adjustment position in wood doors.
(5) Top and bottom latches in steel and aluminum doors and top latch in wood doors may be removed while door is hanging.

2.09 ELECTRONIC ACCESS CONTROL WIRELESS CYLINDRICAL LOCK

A. Manufacturers:
1. Scheduled Manufacturer and Product:
a. Schlage NDEB series

B. Requirements:
1. ANSI/BHMA A156.2 Series 4000, Grade 1.
2. Florida Building Code (ASTM E330, E1886, E1996) and Miami Dade (TAS 201, 202, 203) requirements for hurricanes.
3. Certified to UL10C 3-hour rating, ULC-S319, FCC Part15, ADA RoHS, ICC ANSI A117.1
4. Listed, UL 294 - The Standard of Safety for Access Control System Units.

5. Compliant with ANSI/BHMA A156.25 Operation and Security interior operating range of 32 degrees F (0 degrees C) to 120 degrees F(49 degrees C) for interior use only.
6. Compliant with ASTM E330 for door assemblies.
7. Compliant with ICC / ANSI A117.1, NFPA 101, NFPA 80 and IBC Chapter 10 Cylinders: Refer to "KEYING" article, herein.
8. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
    a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
    b. Offset lever pull – minimum 1,600-foot pounds without gaining access
    c. Vertical lever impact – minimum 100 impacts without gaining access
    d. Cycle Test - tested to minimum 16 million cycles with no visible lever sag or use of performance aids such as set screws or spacers.
9. Emergency Override: Provide mechanical key override; cylinders: Refer to "KEYING" article, herein.
10. Levers:
    a. Provide lever trim that operates independently of each other and is field reversible without tools.
11. Power Supply: 4 AA batteries
    a. Provide battery powered wireless electronic products with the ability to communicate battery status and battery voltage level by means of a mobile app at door and remotely by Partner integrated software.
12. Features:
    a. Ability to communicate unit's communication status.
    b. Visual LED indicators that indicate activation, operational systems status, system error conditions and low power conditions.
    c. Audible feedback that can be enabled or disabled.
    d. Suitable for both interior and exterior deployment.
    e. Employ Wi-Fi communications to permit remote view of audits and alerts, as well as provide automatic daily updates to lock configuration and user access rights.
13. Adaptability:
    a. Open Architecture: Provide locksets manufactured with open architecture characteristics capable of handling new and existing access control software and credential reading technology. Can be supported by cloud-based web and mobile apps without the need for an integrated software partner.
14. Switches:
    a. Door Position Sensor – magnet integrated into strike to eliminate additional door prep
    b. Interior Cover Tamper Guard
    c. Battery Status
    d. Request to Exit
    e. Interior Push Button
15. Credentials: Provide integral credential reader modules in the following configurations:
    a. NFC, including peer-peer compatible, operable with both Android and IOS mobile devices
    b. 125 kHz contactless smart cards
        1) Compatibility: Schlage, XceedID, ISONAS, HID, GE/CASI, AWID
    c. 13.56 MHz contactless smart cards
        1) Secure section (multi-technology and smart card) compatibility: Schlage MIFARE Classic, Schlage MIFARE DESFire EV1/EV3
        2) 13.56 MHz Serial number only (multi-technology and smart card) compatibility: DESFire CSN, HID iCLASS CSN, MIFARE CSN, MIFARE DESFire EV1/EV3 CSN
    d. Multi-technology contactless for applications requiring read capability for both 125 kHz proximity and 13.56 MHz contactless smart cards.
    e. BLE

16. Records: Subject to the limitations of the attached access control system, the wireless locks possess enough storage capacity to support 5000 users and 2000 audits.
17. Verification time: less than or equal to 1 second for smart cards and proximity cards
18. Coordinate with Division 01 and 281300 Access Control.

2.10 ELECTRONIC ACCESS CONTROL LOCKSETS AND EXIT DEVICE TRIM

A. Manufacturers:
   1. Scheduled Manufacturer and Product:
      a. Schlage AD Series

B. Requirements:
   1. Provide adaptable electronic access control products that comply with the following requirements:
      a. Listed, UL 294 - The Standard of Safety for Access Control System Units.
      b. Compliant with ANSI/BHMA A156.25 Grade 1 Operation and Security.
      c. Certified to UL10C, FCC Part15, Florida Building Code Standards TAS 201 large missile impact, TAS 202 and TAS 203.
      d. Compliant with ASTM E330 for door assemblies.
      e. Compliant with ICC / ANSI A117.1, NFPA 101, NFPA 80, and Industry Canada IC.
   2. Functions: Provide functions as scheduled that are field configurable without taking the adaptable electronic product off the door.
   3. Emergency Override: Provide mechanical key override; cylinders: Refer to "KEYING" article, herein.
   4. Levers:
      a. Provide non-handed lever trim that operates independently of non-locking levers.
      b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.
   5. Features:
      a. Audible feedback that can be enabled or disabled.
      b. Tamper-Resistant Screws: Tamper torx screws on inside escutcheon for increased security.
      c. Visual tri-colored LED indicators that indicate activation, additional PIN code credential required, operational systems status, system error conditions and low power conditions.
      d. Door Position Switch
      e. Interior Cover Tamper Guard
      f. Mechanical Key Override
      g. Request to Exit
      h. Request to Enter
      i. Lock/Unlock Status
   6. Credential Reader
      a. Credential Reader Configuration: Provide credential reader modules in the following configurations as indicated in door hardware sets.
      b. Credential Reader Capabilities: Provide credential readers capable of operating with the following integrated software partners.
         1) 13.56 MHz Smart card credentials:
            (a) Secure section (Multi-Technology and Smartcard): Schlage MIFARE Classic, Schlage MIFARE DESFire EV1/EV3, PIV and PIV-I Compatible
            (b) 13.56 MHz Serial number only (Multi-Technology and Smartcard): MIFARE, DESFire, HID iClass, MIFARE DESFire EV1/EV3
            (c) 125 kHz Proximity card credentials: Schlage, XceedID, HID, GE/CASI ProxLite and AWID.
         2) Multi-Technology readers that read both 13.56 MHz Smart Cards and 125 kHz Prox cards.

3) Dual credential reading capabilities credential card or fob and PIN.
4) 12 button keypad with backlit buttons.
5) Magnetic Card Reader:
   (a) Full insertion or swipe reader capable of reading information along full length of magnetic stripe.
   (b) Magnetic card triple track reader capable of reading tracks 1, 2 or 3 per configuration in field.

7. Operation:
   a. Offline – access control rights stored on device
      1) Provide adaptable electronic access control products with the ability to be configured at door by handheld programming device the length of time device is unlocked upon access grant.
      2) Provide adaptable electronic access control products with the ability to communicate identifying information such as firmware versions, hardware versions, serial numbers, and manufacturing dates by handheld programming device.
   b. Networked – hardwired
      1) Adaptable electronic access control product system interface:
      2) Adaptable electronic access control products to have real-time bidirectional communication between access control system and lock.
      3) Credential Verification Time: less than 1 second.
      4) When Utilized with Partner Integrated Access Control Network Software with Remote Commanding Capability: Provide adaptable electronic access control product with the ability to be remotely locked down or unlocked within 10 seconds or less, without user interface at the device.
      5) Upon Loss of Power to Device: Provide adaptable electronic access control product with the ability to manage access control offline in one of three methods below that can be configured in the field at lockset by handheld programming device and remotely by Partner integrated software:
         (a) Fail locked (secured)
         (b) Fail unlocked (unsecured)
         (c) Fail As-Is
      6) Upon Loss of Communication Between Device and Network: Provide adaptable electronic access control product with the ability to manage access control offline in one of four methods below that can be configured in the field at device by handheld programming device and remotely by Partner integrated software:
         (a) Fail locked (secured)
         (b) Fail unlocked (unsecured)
         (c) Fail As-Is
         (d) Fail to Degraded/cache mode utilizing cache memory with following selectable options:
            (1) Grant access up to the last 1,000 unique previously accepted User IDs.
            (2) Grant access up to the last 1,000 unique previously accepted facility/site codes.
            (3) Remove from cache previously stored User IDs or facility/site codes that have not been presented to lock within the last 5 days.
      7) Provide adaptable electronic access control product with the ability to be configured at door by handheld programming device and remotely by Partner integrated software the length of time device is unlocked upon access grant.
      8) Provide adaptable electronic access control product with the ability to communicate identifying information such as firmware versions, hardware versions, serial numbers, and manufacturing dates by handheld programming device and remotely by Partner integrated software.
   c. Networked – wireless

1) Adaptable electronic access control product system interface:
2) Adaptable electronic access control products to have real-time bidirectional communication between access control system and lock.
3) Remote Commanding By Partner Integrated Access Control Network Software: Battery-powered lockset shall have "Wake on Radio" feature causing activation of remote, wireless access control devices, enabling activated devices to be configured, locked or unlocked from a centralized location within 10 seconds or less without user interface at the device.
4) Local Commanding: Provide adaptable electronic access control product with the ability to be configured, locked or unlocked locally by handheld programming device, in real-time.
5) When Utilized with Access Control Network Software with Remote Commanding Capability: Provide adaptable electronic access control product with the ability to be remotely locked down or unlocked within 10 seconds or less while battery powered without user interface at the device.
6) Real-time response of battery powered device capable of being configured at door by handheld programming device and remotely by Partner integrated software.
7) Upon Loss of Power to Device: Provide adaptable electronic access control product with the ability to manage access control offline in one of three methods below that can be configured in the field at device by handheld programming device and remotely by Partner integrated software:
   (a) Fail locked (secured)
   (b) Fail unlocked (unsecured)
   (c) Fail As-Is
8) Upon Loss of Communication Between Device and Network: Provide adaptable electronic access control product with the ability to manage access control offline in one of four methods below that can be configured in the field at lockset by handheld programming device and remotely by Partner integrated software:
   (a) Fail locked (secured)
   (b) Fail unlocked (unsecured)
   (c) Fail As-Is
   (d) Fail to Degraded/cache mode utilizing cache memory with following selectable options:
      (1) Grant access up to the last 1,000 unique previously accepted User IDs.
      (2) Grant access up to the last 1,000 unique previously accepted facility/site codes
      (3) Remove from cache previously stored User IDs or facility/site codes that have not been presented to lock within the last 5 days.
9) Provide adaptable electronic access control product with the ability to be configured at door by handheld programming device and remotely by Partner integrated software the length of time device is unlocked upon access grant.
10) Provide adaptable electronic access control product with the ability to communicate identifying information such as firmware versions, hardware versions, serial numbers, and manufacturing dates by handheld programming device and remotely by Partner integrated software.
11) Wireless Transmission:
   (a) Modulation: 900 MHz spread spectrum, direct sequence, 10 channels.
   (b) Encryption: AES-128-bit Key minimum.

C. Components
   1. Product: Schlage HHD series with Utility Software. (OFFLINE)
      a. Provide Handheld Programming Device for adaptable electronic access control products capable of the following minimum requirements.

1) Capable of initializing lock and accessories using preloaded software.
2) Utilized to field configure electronic access control devices, to download firmware updates and door files to device, and to download audit files from device.

2. Provide Panel Interface for adaptable electronic access control products.
   a. Product: Schlage PIB300-2D Panel Interface Board. (AD-300)
   b. Product: Schlage PIM400-485 or PIM400-TD2 Panel Interface Module as required. (AD-400)
   c. Product: Schlage PIM400-1501 Panel Interface Module. (AD-400)

2.11 ACCESS CONTROL PLATFORM

A. Manufacturers and Products:
   1. Scheduled Manufacturer:
      a. Schlage Engage Commercial

B. Requirements:
   1. Provide a cloud-based platform capable of managing users, credentials, access rights, schedules, and audits.
   2. All locks must be supplied in construction mode.
   3. Provide a platform that supports a mobile application (app). Mobile application must allow for:
      a. Commissioning and configuring devices
      b. Immediately updating door files
      c. Retrieving audit information
      d. Performing firmware updates
   4. Provide software set up on the owner's workstation and Mobile Device which includes:
      a. Creation of the Owner's Account
      b. Creation of the Project Site
      c. Creation of the Team as directed by the Owner
      d. Addition of five users
      e. Set up of MT20W and update firmware
      f. Create unique credentials and verify proper commissioning of ten locks
   5. Provide, at the owner's request, the following on-site training prior to the expiration of the service agreement:
      a. Completing the following with ENGAGE software:
         1) Modifying the Team
         2) Move in/move out procedure including
            (a) Adding and Deleting Users
            (b) Adding and Deleting Doors
         3) Adding, assigning and programming credentials for access
         4) Replacing or deleting lost credentials.
         5) Retrieving and viewing of audit information
         6) Assigning temporary access
      b. Commissioning and verifying proper functioning between locks and credentials.
      c. Updating firmware on the locks.
   6. Must include a service agreement ending a year after Substantial Completion. This service agreement includes being on-site up to 16 hours for set-up and training, as listed above.

2.12 MAGNETIC LOCKS

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Schlage

B. Requirements:
1. Provide magnetic locks certified to meet ANSI/BHMA A156.23 classification criteria, UL10C, and UL1034 for burglary-resistant electronic locking mechanisms.
2. Provide magnetic locks equipped with SPDT Magnetic Bond Sensing device, where specified, to monitor whether enough magnetic holding force exists to ensure adequate locking and SPDT Door Status Monitor device, where specified, to monitor whether door is open or closed. Provide bond sensors fully concealed within electromagnet to resist tampering or damage.
3. Provide fasteners, mounting brackets, and spacer bars required for mounting and details.
4. Provide power supply recommended and approved by manufacturer of magnetic locks.
5. Where magnetic locks are scheduled, provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of magnetic locks for each individual leaf. Switches control both doors simultaneously at pairs. Locate controls as directed by Architect.

2.13 CYLINDERS

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product:
a. Schlage Everest 29 Primus XP

B. Requirements:
1. Provide cylinders/cores, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
a. High Security: dual-locking cylinder with permanent core requiring restricted, patented keyway. Dual-locking mechanism with interlocking finger pin(s) to check for patented features on keys.
3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.14 CYLINDERS

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product:
a. Schlage OBV Primus RP

B. Requirements:
1. Provide cylinders/cores, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.
2. Provide high security dual-locking cylinder with permanent core and nickel silver bottom pins.

2.15 CYLINDERS

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product:
a. Schlage Everest 29 SL

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
   a. Patented Restricted 7-Pin: cylinder with permanent 7-pin core with keys capable of working in full size key-in-lever/knob, and small format interchangeable core.
3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.16 CYLINDERS

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. Schlage Everest 29 T

B. Requirements:
   1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
   2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
      a. Patented Restricted: cylinder with interchangeable core with patented, restricted keyway.
   3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
   4. Nickel silver bottom pins.

2.17 CYLINDERS

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. Schlage Everest 29 S

B. Requirements:
   1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
   2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
      a. Patented Open: cylinder with interchangeable core with open keyway.
   3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
   4. Nickel silver bottom pins.

2.18 CYLINDERS

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. Schlage Everest 29 R

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
    a. Patented Restricted Small Format: cylinder with small format interchangeable cores (SFIC) with restricted, patented keyway.
3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.19 CYLINDERS

A. Manufacturers and Products:
    1. Scheduled Manufacturer:
        a. Falcon

B. Requirements:
    1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
    2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
        a. Open: cylinder with small format interchangeable core (SFIC) core with open keyway

2.20 CYLINDERS

A. Manufacturers:
    1. Scheduled Manufacturer and Product:
        a. <TBD by Owner>
    2. Acceptable Manufacturers and Products:
        a. No Substitute

B. Requirements:
    1. Provide cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.

2.21 KEYING

A. Scheduled System:
    1. New factory registered system:
        a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
    2. Existing factory registered system:
        a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
    3. Existing non-factory registered system:
        a. Provide cylinders/cores keyed into Owner's existing keying system managed by Owner's locksmith, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference. Contact:
            1) Firm Name:
            2) Contact Person:
            3) Telephone:

B. Requirements:
1. Permanent Keying:
a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
1) Master Keying system as directed by the Owner.
b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
c. Provide keys with the following features:
1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
d. Identification:
1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
2) Identification stamping provisions must be approved by the Architect and Owner.
3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
e. Quantity: Furnish in the following quantities.
1) Permanent Control Keys: 3.
2) Master Keys: 6.
3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
4) Key Blanks: Quantity as determined in the keying meeting.

2.22 KEY CONTROL SYSTEM

A. Manufacturers:
1. Scheduled Manufacturer:
a. Telkee

B. Requirements:
1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.
a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
b. Provide hinged-panel type cabinet for wall mounting.

2.23 DOOR CLOSERS

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product:
a. LCN 4040XP series

B. Requirements:
1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.

2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2-inch (38 mm) diameter piston with 5/8-inch (16 mm) diameter double heat-treated pinion journal. QR code with a direct link to maintenance instructions.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards. Provide snap-on cover clip, with plastic covers, that secures cover to spring tube.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck. Provide graphically labelled instructions on the closer body adjacent to each adjustment valve. Provide positive stop on reg valve that prevents reg screw from being backed out.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.24 ELECTRO-MECHANICAL CLOSER/HOLDERS

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. LCN

B. Requirements:
   1. Provide single-point or multi-point hold-open electro-mechanical closer/holders as specified. Coordinate voltage requirements and provide transformer if necessary.
   2. Provide closer/holders that function as full rack and pinion door closer when current is interrupted or continuous hold-open is not engaged.
   3. Provide door closers with fully hydraulic, full rack and pinion action with high strength cylinder and full complement bearings at shaft.
   4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
   5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
   6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
   7. Pressure Relief Valve (PRV) Technology: Not permitted.
   8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.25 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product:
      a. LCN 4600 series

B. Requirements:

1. Provide low energy automatic operator units with hydraulic closer complying with ANSI/BHMA A156.19.
2. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
3. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
4. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.
5. Provide drop plates, brackets, and adapters for arms as required for details.
6. Provide actuator switches and receivers for operation as specified.
7. Provide weather-resistant actuators at exterior applications.
8. Provide key switches with LED's, recommended and approved by manufacturer of automatic operator as required for function described in operation description of hardware group below. Cylinders: Refer to "KEYING" article, herein.
9. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
10. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.26 PROTECTION PLATES

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Ives

B. Requirements:
   1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
   2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
   3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.27 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:
   1. Scheduled Manufacturers:
      a. Glynn-Johnson

B. Requirements:
   1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.28 DOOR STOPS AND HOLDERS

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Ives

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.29 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Zero International

B. Requirements:
   1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
   2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
   3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
   4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.30 SILENCERS

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Ives

B. Requirements:
   1. Provide "push-in" type silencers for hollow metal or wood frames.
   2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
   3. Omit where gasketing is specified.

2.31 DOOR POSITION SWITCHES

A. Manufacturers:
   1. Scheduled Manufacturer:
      a. Schlage

B. Requirements:
   1. Provide recessed or surface mounted type door position switches as specified.
   2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
   1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
   2. Custom Steel Doors and Frames: HMMA 831.
   3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
   4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:
   1. Install construction cores to secure building and areas during construction period.
   2. Replace construction cores with permanent cores as indicated in keying section.
   3. Furnish permanent cores to Owner for installation.

J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
   1. Conduit, junction boxes and wire pulls.
   2. Connections to and from power supplies to electrified hardware.
   3. Connections to fire/smoke alarm system and smoke evacuation system.
   4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
   5. Connections to panel interface modules, controllers, and gateways.
   6. Testing and labeling wires with Architect's opening number.

K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

L. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

M. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

N. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

O. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

P. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

Q. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

R. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

S. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

T. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
   1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
   2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
   3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

ABBREVIATION	NAME
GLY	GLYNN-JOHNSON CORP
IVE	H.B. IVES
LCN	LCN COMMERCIAL DIVISION
SCE	SCHLAGE ELECTRONIC SECURITY
SCH	SCHLAGE LOCK COMPANY
TRI	TRIMCO/BBW/QUALITY
VON	VON DUPRIN
ZER	ZERO INTERNATIONAL INC

HW# 01 - PASSAGE

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S ATH	626	SCH
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# 02 - LOCKABLE X MFB NO CLOSER

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB358	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	CLASSROOM LOCK	ND70TD ATH	626	SCH
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	90S	689	GLY
1	EA	WALL STOP	WS406/407CCV	626	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW# 04 - DE MAG EO

Provide each DE door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	PANIC HARDWARE	LD-9827-EO-LBR	626	VON
2	EA	FIRE/LIFE CLOSER	4040SE WMS 24V/120V AC/DC AS REQ	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

OPERATIONAL DESCRIPTION: HOLD OPEN CLOSER TIED INTO FIRE ALARM SYSTEM TO RELEASE UPON FIRE ALARM ACTIVATION.

HW# 04-1 - DE MAG HO EO

Provide each DE door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	PANIC HARDWARE	LD-9827-EO-LBR	626	VON
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM 7800	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER

OPERATIONAL DESCRIPTION:HOLD OPEN CLOSER TIED INTO FIRE ALARM SYSTEM TO RELEASE UPON FIRE ALARM ACTIVATION.

HW# CR01 - WIRELESS IN WS

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# CR01-1 - WIRELESS OUT WS

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH

1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# CR01-2 - WIRELESS OUT CUSH

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# CR01-3 - WIRELESS IN WS MOP

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# CR01-4 - WIRELESS IN OH

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	90S	689	GLY
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# CR02 - PAIR STOREROOM X MFB CUSH

Provide each PR door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2	EA	MANUAL FLUSH BOLT	FB358	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	OH STOP	90S	689	GLY
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW# CR03 - EXT AL AD300 X EO CUSH

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224XY BASE BID	628	IVE
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	9847-EO-F	626	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-300-993R-70-MT-ATH-J 12/24 VDC	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A	A	ZER
1	EA	WEATHER SEALS	BY DOOR/FRAME MANUFACTURER		

HW# CR03-1 - EXT STOREROOM AL

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224XY BASE BID	628	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A	A	ZER
1	EA	WEATHER SEALS	BY DOOR/FRAME MANUFACTURER		

HW# CR03-2 - EXT STOREROOM X FB

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224XY BASE BID	628	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE

1	EA	DUST PROOF STRIKE	DP1	626	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
2	EA	SURFACE CLOSER	4040XP SCUSH ST-1595 SPEC	689	LCN
1	SET	GASKETING	328AA-S	AA	ZER
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A	A	ZER

HW# CR04 - EXT AL AO NL MULL

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224XY BASE BID	628	IVE
1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	REMOVABLE MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	LD-98-EO	626	VON
1	EA	ELEC PANIC HARDWARE	RX-LC-QEL-98-NL-CON 24 VDC	626	VON
2	EA	CYLINDER	AS REQUIRED X KEYED CONSTRUCTION CORE	626	
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	SURF. AUTO OPERATOR	4642 120 VAC	689	LCN
1	EA	WEATHER RING	8310-801		LCN
2	EA	ACTUATOR, TOUCH	8310-853T ACTIVE LOGO TO BE USED	630	LCN
1	EA	BOLLARD PART	8310-866		LCN
1	EA	MULLION SEAL	8780NBK PSA	BK	ZER
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A	A	ZER
1	EA	WIRE HARNESS	CON-XX-P LENGTH AS REQUIRED		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	MULTITECH READER	RC15 12 VDC	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE
1	EA	WEATHER SEALS	BY DOOR/FRAME MANUFACTURER		

OPERATIONAL DESCRIPTION: IMMEDIATE EGRESS ALWAYS ALLOWED. ACCESS BY KEY OR CARD READER. CARD READER RETRACTS LATCH AND ENABLES EXTERIOR ACTUATOR. DOOR CAN BE MANUALLY PULLED OPEN OR AUTOMATICALLY OPERATED BY PUSHING ACTUATOR WHICH SIGNALS AUTOMATIC OPERATOR TO OPEN DOOR. INTERIOR ACTUATOR TO RELEASE ELECTRIC STRIKE AND SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

HW# CR04-1 - INT AL AO NL MULL

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224XY BASE BID	628	IVE
1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	REMOVABLE MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	LD-98-EO	626	VON
1	EA	ELEC PANIC HARDWARE	RX-LC-QEL-98-NL-CON 24 VDC	626	VON
1	EA	CYLINDER	AS REQUIRED X KEYED CONSTRUCTION CORE	626	
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	WEATHER RING	8310-801		LCN
2	EA	ACTUATOR, TOUCH	8310-853T ACTIVE LOGO TO BE USED	630	LCN
1	EA	BOLLARD PART	8310-866		LCN
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A	A	ZER
1	EA	WIRE HARNESS	CON-XX-P LENGTH AS REQUIRED		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	MULTITECH READER	RC15 12 VDC	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE

OPERATIONAL DESCRIPTION: IMMEDIATE EGRESS ALWAYS ALLOWED. ACCESS BY KEY OR CARD READER. CARD READER RETRACTS LATCH AND ENABLES EXTERIOR ACTUATOR. DOOR CAN BE MANUALLY PULLED OPEN OR AUTOMATICALLY OPERATED BY PUSHING ACTUATOR WHICH SIGNALS AUTOMATIC OPERATOR TO OPEN DOOR. INTERIOR ACTUATOR TO RELEASE ELECTRIC STRIKE AND SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

HW# CR04-2 - INT AL AO NL MULL SECURITY

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224XY BASE BID	628	IVE
1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	REMOVABLE MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	LD-98-EO	626	VON
1	EA	ELEC PANIC HARDWARE	RX-LC-QEL-98-NL-CON 24 VDC	626	VON
1	EA	CYLINDER	AS REQUIRED X KEYED CONSTRUCTION CORE	626	
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	WEATHER RING	8310-801		LCN
2	EA	ACTUATOR, TOUCH	8310-853T ACTIVE LOGO TO BE USED	630	LCN
1	EA	BOLLARD PART	8310-866		LCN

2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A	A	ZER
1	EA	WIRE HARNESS	CON-XX-P LENGTH AS REQUIRED		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	MULTITECH READER	RC15 12 VDC	BLK	SCE
1	EA	DESK MOUNT BUTTON	660-PB TO BE MOUNTED IN SECURITY OFFICE	628	SCE
2	EA	DOOR CONTACT	7764	628	SCE

OPERATIONAL DESCRIPTION: IMMEDIATE EGRESS ALWAYS ALLOWED. ACCESS BY KEY OR CARD READER. CARD READER RETRACTS LATCH AND ENABLES EXTERIOR ACTUATOR. DOOR CAN BE MANUALLY PULLED OPEN OR AUTOMATICALLY OPERATED BY PUSHING ACTUATOR WHICH SIGNALS AUTOMATIC OPERATOR TO OPEN DOOR. INTERIOR ACTUATOR TO RELEASE ELECTRIC STRIKE AND SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

HW# CR04-3 - INT AO NL MULL

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224XY BASE BID	628	IVE
1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	REMOVABLE MULLION	KR4954	689	VON
1	EA	PANIC HARDWARE	LD-98-EO	626	VON
1	EA	ELEC PANIC HARDWARE	RX-LC-QEL-98-NL-CON 24 VDC	626	VON
1	EA	CYLINDER	AS REQUIRED X KEYED CONSTRUCTION CORE	626	
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	WEATHER RING	8310-801		LCN
2	EA	ACTUATOR, TOUCH	8310-853T ACTIVE LOGO TO BE USED	630	LCN
1	EA	BOLLARD PART	8310-866		LCN
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	MULLION SEAL	8780NBK PSA	BK	ZER
1	EA	WIRE HARNESS	CON-XX-P LENGTH AS REQUIRED		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	MULTITECH READER	RC15 12 VDC	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE

OPERATIONAL DESCRIPTION: IMMEDIATE EGRESS ALWAYS ALLOWED. ACCESS BY KEY OR CARD READER. CARD READER RETRACTS LATCH AND ENABLES EXTERIOR ACTUATOR. DOOR CAN BE MANUALLY PULLED OPEN OR AUTOMATICALLY OPERATED BY PUSHING ACTUATOR WHICH SIGNALS AUTOMATIC OPERATOR TO OPEN DOOR. INTERIOR ACTUATOR TO RELEASE ELECTRIC STRIKE AND SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

HW# CR05 - RATED AD300 HO MULL

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE RATED REMOVABLE MULLION	KR9954	689	VON
2	EA	FIRE EXIT HARDWARE	98-EO-F	626	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-300-993R-70-MT-ATH-J 12/24 VDC	626	SCE
1	EA	CYLINDER	AS REQUIRED X KEYED CONSTRUCTION CORE	626	
2	EA	FSIC CORE	23-030 EV29 T	626	SCH
2	EA	FIRE/LIFE CLOSER	4040SE WMS 24V/120V AC/DC AS REQ	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	MULLION SEAL	8780NBK PSA	BK	ZER
2	EA	DOOR CONTACT	7764	628	SCE

OPERATIONAL DESCRIPTION: HOLD OPEN CLOSER TIED INTO FIRE ALARM SYSTEM TO RELEASE UPON FIRE ALARM ACTIVATION.

HW# CR06 - SCUSH GLASS WALL SYSTEM

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	HANGING METHOD AND GASKETING	BY KI GLASS WALL SYSTEM		

HW# CR06-1 - IN GLASS WALL SYSTEM

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBT ATH BATTERY OPERATED	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	RETRACTING COORDINATOR	3092	626	TRI
2	EA	SURFACE CLOSER	4031 WMS	689	LCN
2	EA	FLOOR STOP	FS13	626	IVE

1	EA	HANGING METHOD AND GASKETING	BY KI GLASS WALL SYSTEM

HW# CR07 - WIRELESS EO CUSH

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	PANIC HARDWARE	LD-98-EO	626	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-300-993R-70-MT-ATH-J 12/24 VDC	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW# CR08 - RATED WIRELESS IN WS

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	9847-EO-F	626	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-300-993R-70-MT-ATH-J 12/24 VDC	626	SCE
1	EA	FSIC CORE	23-030 EV29 T	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

OPERATIONAL DESCRIPTION: HOLD OPEN CLOSER TIED INTO FIRE ALARM SYSTEM TO RELEASE UPON FIRE ALARM ACTIVATION.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Linear metal ceilings and soffits.

B. Suspended metal support system and perimeter trim.

1.02 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.

C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

E. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.

F. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

I. ASTM E413 - Classification for Rating Sound Insulation; 2022.

J. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2022.

1.03 DESIGN REQUIREMENTS

A. Design components to ensure light fixtures and installed accessories will not induce eccentric loads. Where components may induce rotation of ceiling system components, provide stabilizing reinforcement.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate work of this section with installation of mechanical and electrical components and with other construction activities affected by work of this section.

B. Preinstallation Meeting: Convene one week before starting work of this section.

C. Sequencing: Supply hanger clips during steel deck erection. Supply additional hangers and inserts as required.

1.05 SUBMITTALS

A. See Section 013300 - SUBMITTALS, for submittal procedures.

B. Product Data: Furnish for component profiles.

C. Shop Drawings: Indicate reflected ceiling plan.

D. Manufacturer's Qualification Statement.

E. Installer's Qualification Statement.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016100 - BASIC PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Linear Panels: Provide standard length panels matching the installed panels in all respects in a quantity of not less than 5% of the Linear Metal Ceiling area with a minimum of two full size panels.

1.06 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.
   1. Minimum three years documented experience.
   2. Approved by metal ceiling manufacturer.

C. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Accept factory-finished products on site in manufacturer's unopened factory packaging only; reject opened packages.

B. Protect factory-finished products from damage to appearance by storing products in manufacturer's unopened factory packaging in dry storage area.

1.08 WARRANTY

A. See Section 017800 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Linear Metal Ceilings:
   1. Armstrong World Industries, Inc; METALWORKS Torsion Spring:; METALWORKS Blades - Classics; METALWORKS Linear- Synchro, www.armstrongceilings.com/#sle.
   2. Tavola™ Prime Beam and Baffle ceiling system manufactured by CertainTeed Architectural; 5015 Oakbrook Parkway, Suite 100, Norcross, GA 30093. Tel: (800) 366-4327; www.CertainTeed.com/Architectural
   3. Substitutions: Section 012500 - Product Susbtitutions.

2.02 LINEAR METAL CEILINGS - GENERAL

A. Linear Metal Ceiling and Soffit Systems: Panels and Blades and Soffits, suspension members, trim, and accessories as required to provide a complete system.

B. Performance Requirements:
   1. Design to support imposed loads of indicated items without eccentric loading of supports.
   2. Design for maximum deflection of 1/360 of span.
   3. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 50 or less, when tested in accordance with ASTM E84.

2.03 SYSTEMS

A. METALWORKS - Torsion Spring Interior Metal Panels: (CP-2)
   1. Type: Torsion Spring Panels with Extruded perimeter trim; downward accessible flat panels. ASTM E1264, Type XX Pattern C Fire Class A (Perforated)
      a. Size and Configuration: 24 inches wide by 72 inches long by 1 1/2 inches high.
      b. Panel Profile: Square edge
   2. Material: Aluminum sheet, ASTM B209 (ASTM B209M).
      a. Gauge: 0.040 inch (Interior).
      b. Perforations: Pattern M15 (Rd 1612)
      c. Finish: Polyester Paint
      d. Color: Whitelume and as indicated on the drawings
      e. Springs per panel; 6
      f. Filler: Integral Black Fiberglass Fleece.
      g. NRC: 0.90 (1 inch fiberglass)
      h. Fire Class: Class A, ASTM E84, Smoke Developed less than 50.
      i. Light Reflectance: 0.75
      j. Recycled Content: up to 16%
      k. Finish and color: as selcted by the Architect from the manufacturer's full pattern and color offering.
      l. Weight: 0.69 psf

B. METALWORKS Blades - Linear Metal Baffles: Suspended vertically from suspension members. (ACB-1)
   1. Profile: Beam shaped.
   2. Size: 96 inches long by 4 inches deep by 1 inch wide with caps on one end.
   3. Pattern and Spacing: As indicated on the drawings.
   4. Material: Aluminum extrusions, ASTM B221 (ASTM B221M).
   5. Sound Absorption: 0.92 Sabins per sq. ft.
   6. Perforations: Pattern M15 (Rd 1612)
   7. Recycled Content: up to 80%
   8. Finish: Anodized; Custom color as selected by the Architect.

C. METALWORKS Linear - Synchro Planks (ECP-1).
   1. Manufacturer: Armstrong World Industries or Architect approved equivalent.
   2. Profile: Plank shaped.
   3. Size: 9 inches wide by 96 inches long by 1 inch deep.
   4. Pattern and Spacing: As indicated on the drawings.
   5. Material: Aluminum extrusions, ASTM B221 (ASTM B221M).
   6. Gauge: 0.028 inch.
   7. Finish: Polyester Paint
   8. Color: White and as indicated on the drawings
   9. Perforations: M1 (unperforated)
   10. NRC: 0.70 (M2 perforated only)
   11. Fire Class: Class A, ASTM E84, Smoke Developed less than 50.
   12. Light Reflectance: 0.83
   13. Recycled Content: 58%
   14. Suspension System: Main Beam Carrier (MBC2).

15. Provide accessories as required to provide a complete system installation indicated on the drawings.

D. TAVOLA™ PRIME Beam and Baffles (ACB-3)
1. Manufacturer: Certainteed ARCHITECTURAL or Architect approved equivalent.
2. Ceiling system for interior installations providing single beam access with use of scissor clips.
3. Material: Alumnium
4. Profile: Beam shaped.
5. Size: 2 inches wide by 10 inches deep.
6. Beam Spacing: 10 inches and as indicated on the drawings.
7. Beam Lengths: Lengths as indicated on the drawings
8. Suspension:
   a. Grid: 15/16" heavy-duty T-grid
   b. Hanger Bracket Assembly: Scissor-clip beam attachment
9. Perforations:
   a. Non-Perforated
   b. Perforation Pattern: 115 on vertical sides of beam only
10. NRC: 1.15 (non-woven black 1.5 pcf poly encapsulated fiberglass)
11. Fire Class: Class A, ASTM E84, Smoke Developed
12. Light Reflectance: 0.81
13. Recycled Content: up to 85%
14. Finish: Polyester Paint.
15. Color: Cotton White and as indicated on the drawings.
16. Weight: 0.5 to 2.1 psf.
17. Provide matching End caps and accessories as required to provide a complete system installation indicated on the drawings.

2.04 ACCESSORIES

A. Acoustical Backer: Manufacturer's standard non-woven fabric; as required to achieve specified acoustic performance.

B. End Caps: 0.025 inch thick aluminum in color as selected by the Architect from the manufacturer's full color offering. Caps fabricated to match end profile of linear panels.

C. Accessories: Stabilizer bars and clips as required for suspended grid system; sight-exposed surfaces same color and finish as sight-exposed surfaces of linear panels.

D. Suspension Members: Formed aluminum sections, with integral attachment points; primed finish; size and type to suit application and ceiling system flatness requirement specified.
1. Symmetrical Carrier:
   a. Manufactured to an inverted "U" shape from 0.040 inch aluminum 144 inches long. Coated with black polyester enamel.
   b. Slotted at appropriate intervals to receive stabilizing components.
2. Stabilizer Bars: manufactured from 0.025 inch thick aluminum, 49 13/16 inches long. Coated with black polyester enamel.
3. Radius Carrier: manufactured to an inverted "U" shape from 0.040 inch thick aluminum, 144 inches long with integral carrier tabs, painted black.

E. Suspension Wire: Steel, annealed, galvanized finish, 9 gauge, 0.1144 inch (2.91 mm) diameter.

2.05 FABRICATION

A. Shop cut linear panels to accommodate mechanical and electrical items.

B. Factory-form internal and external corners of same material, thickness, finish, and profile to match exposed linear panels; back brace internal corners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions for compliance with the manufacturer's installation requirements and specified tolerances, with installer present. Correct any deficiencies found before commencing the work of this section.

B. Verify that layout of hangers will not interfere with other work.

C. Verify that required utilities are available, in proper location, and ready for use.

D. Verify that field measurements are as indicated on shop drawings.

3.02 INSTALLATION

A. Suspension Components:
   1. Install after above-ceiling work is complete in accordance with manufacturer's instructions, ASTM C636/C636M, and ASTM E580/E580M.
   2. Hang carrying members independent of walls, columns, ducts, light fixtures, pipe, and conduit; where carrying members are spliced, avoid visible displacement of face panels with adjacent panels.
   3. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest adjacent hangers to span the required distance.
   4. Locate suspension system for linear panel layout parallel to building lines according to reflected plan.
   5. Symmetrical Carriers: Installed 50 inches on center by direct suspension from existing structure with not less than 12 gauge hanger wires wrapped tightly 3 full turns, spaced 48 inches on center.
   6. Stabilizer Bars: Installed perpendicular to symmetrical carrier (24) (48) inches on center.

B. Linear Metal Ceiling:
   1. Install linear panels and other system components in accordance with manufacturer's instructions.
   2. Stagger end joints minimum 12 inches (300 mm) unless noted otherwise on the approved shop drawings.
   3. Butt interior end joints tight.
   4. Install filler strips between linear panels at interior locations.
   5. Install edge moldings at junctions with other finishes and at vertical surfaces; use maximum piece lengths.
   6. Install end caps at sight-exposed ends of linear panels.
   7. Exercise care when site cutting sight-exposed finished components to ensure surface finish is not defaced.
   8. Access Panels: Installed in accordance with manufacturers recommendations.

3.03 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/16 inch in 10 feet (____ mm in 3 m).

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

C. Maximum Variation From Dimensioned Position: 1/4 inch (6 mm).

3.04 CLEANING

A. Clean exposed surfaces in accordance with the manufacturer's written instructions.

B. Replace damaged or abraded components.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabric-covered fiberglass core wall panels and mounting accessories.

B. Fabric-covered fiberglass core ceiling baffles.

1.02 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2022.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

D. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests; 2016.

1.03 SUBMITTALS

A. See Section 013300 - SUBMITTALS, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, panel sizes, shapes and layouts, color and texture schedule and fabric orientation.

D. Selection Samples: Manufacturer's color charts for fabric covering, indicating full range of fabrics, colors, and patterns available .

E. Verification Samples: Fabricated samples of each type of panel specified; 12 by 12 inch (305 by 305 mm), showing construction, edge details, and fabric covering.

F. Test Reports: Certified test data from an independent test agency verifying that panels meet specified requirements for acoustical and fire performance.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016100 - BASIC PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Panels: Quantity equal to 5 percent of total installed, but not less than one of each type.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company with not less than ten years of experience in manufacturing acoustical products similar to those specified.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect acoustical panels from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until panels are needed for installation.

B. Store panels flat, in dry, well-ventilated space; do not stand panels on end.

C. Protect panel edges from damage.

1.06 MOCK-UP

A. See Section 014500 - QUALITY CONTROL, for additional mock-up requirements.

B. Construct mock-up of acoustical panels at location indicated by Architect/Engineer.
   1. Minimum mock-up dimensions; 96 by 96 inches (2440 by 2440 mm).
   2. Approved mock-up may remain as part of the Work.

1.07 WARRANTY

A. Provide manufacturer's 1-year limited warranty covering defects in materials and / or factory workmanship for Acoustical canopy ceiling systems.

B. Provide manufacturer's 1-year limited warranty covering defects in materials and / or factory workmanship for Acoustical wall systems.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fabric-Covered Acoustical Panels:
   1. Armstrong World Industries, Inc: SOUNDSCAPES Blades Linear Acoustical Panels www.armstrong.com.
   2. Architect approved equivalent.
   3. Substitutions: 012500 - PRODUCT SUBSTITUTION PROCEDURES

B. Provide all Linear Acoustical Panels by one manufacturer.

2.02 FABRIC-COVERED LINEAR ACOUSTICAL CEILING PANELS (ACB-2)

A. Linear Ceiling Panels: Prefinished, factory assembled fabric-covered panels.
   1. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   2. Light reflectance: 0.90 (White).
   3. Other Linear Panel Characteristics:
      a. Washable
      b. Scratch Resistant
      c. Soil Resistant
      d. 71% Recycled content

B. Fiberglass Core Panels:
   1. Density: 7 to 10 lb/cu ft (112 to 160 kg/cu m).
   2. Noise Reduction Coefficient (NRC): 1.15 (6 inch Blade spacing) when tested in accordance with ASTM C423.
   3. Panel Thickness: 2 inches and as indicated on the drawings..
   4. Panel Height: 10 inches and as indicated on the drawings.
   5. Panel Height: 10 inches and as indicated on the drawings.
   6. Edges: Perimeter edges - Square with Durabrite scrim on all sides.
   7. Corners: Square.
   8. Mounting: Direct to Grid Suspension System.
   9. Seismic Restraint: Contractor shall refer to ASCE 7, Section 13.5, Architectural Components for seismic requirements.

C. Fabric Covering: Seamless fabric facing material, for stretched covering of core material.
   1. Fabric: Durabrite scrim on all sides with finished square edges..
   2. Color(s): White, Sky, Lagoon, Tangerine, and as indicated on the drawings..

2.03 FABRICATION

A. Fabric Wrapped, General: Fabricate panels to sizes and configurations indicated, with fabric facing installed without sagging, wrinkles, blisters, or visible seams.
   1. Where radiused or mitered corners are indicated, install fabric to avoid seams or gathering of material.
   2. For panels suspended from ceiling, provide fabric covering both sides, with seams only at panel edges.

B. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch (1.6 mm) for thickness, overall length and width, and squareness from corner to corner.

2.04 ACCESSORIES

A. Provide Main Beam, Cross Tees, wall angle moldings and other accessories to complete the installation of Linear Acoustic Baffle systems in accordance with the manufacture's specifications, instructions and recommendations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of acoustical Linear Baffles. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install acoustical Linear Baffles in locations indicated, following installation recommendations of panel manufacturer. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.

B. Install Acoustical Linear Baffles in strict accordance with the manufacturers installation instructions. Provide minimum clearances between panels.

C. Coordinate Linear Baffles locations with the fire sprinkler and fire / smoke detection systems to insure that these systems shall comply with NFPA 13 and local codes where they are included in the work of the project. Failure to coordinate this work may cause field adjustments to be required in order to obtain final approvals of these systems accordingly which shall be done at no additional cost to the Owner.

D. Ceiling Linear Baffles shall be handled and installed by a team of at least two persons in accordance with the manufacturers instructions.

E. Linear Baffles edge protectors shall remain in place until panel is installed. Field painting shall not be permitted. Damaged or scuffed panels shall be replaced with new panels at no additional cost to the Owner.

F. Install panels to construction tolerances of plus or minus 1/16 inch (1.6 mm) for the following:
   1. Plumb and level.
   2. Spacing of Linear Panels.

3.03 CLEANING

A. Clean fabric facing upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

B. Remove surplus materials, trimmed portions of panels, and debris resulting from installation.

3.04 PROTECTION

A. Provide protection of installed acoustical wall panels and suspended canopies until completion of the work.

B. Replace Linear Baffles that cannot be cleaned and repaired to satisfaction of the Architect/Engineer.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Window shades and accessories.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

B. Section 092116 - Gypsum Board Assemblies: Substrate for window shade systems.

C. Section 095113 - ACOUSTICAL PANEL CEILINGS: Shade Pockets, pocket closures and accessories.

1.03 REFERENCE STANDARDS

A. ASTM D4674 - Standard Practice for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Office Environments; 2019.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

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

E. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2019.

F. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Where motorized shades are to be controlled by control systems provided under other sections, coordinate the work with other trades to provide compatible products.
   2. Coordinate the work with other trades to provide rough-in of electrical wiring as required for installation of hardwired motorized shades.

B. Preinstallation Meeting: Convene one week prior to commencing work related to products of this section; require attendance of all affected installers.

C. Sequencing:
   1. Do not fabricate shades until field dimensions for each opening have been taken.
   2. Do not install shades until final surface finishes and painting are complete.

1.05 SUBMITTALS

A. See Section 013300 - SUBMITTALS, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.

C. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, mounting dimension requirements for each product and condition, and operation direction.

D. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.

E. Selection Samples: Include fabric samples in full range of available colors and patterns.

F. Samples:
   1. Minimum size 6 inches square, representing actual materials, color and pattern of each shade type material.
   2. Metal finishes: 2 inch square samples of entire color offering for selection by the Architect.

G. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.

H. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of this type with minimum 5 years of documented experience.

1.07 MOCK-UP

A. Mock-Up: Provide full size mock-up of window shade complete with selected shade fabric including sample of seam when applicable.
   1. Obtain Architect/Engineer's approval of light and privacy characteristics of fabric prior to fabrication.
   2. Full-sized mock-up will become the property of the Owner to be used for spare parts.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Schedule delivery after building is enclosed and construction is Substantially Complete.

B. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.

C. Handle and store shades in accordance with manufacturer's recommendations.

1.09 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

A. Provide manufacturer's warranty from Date of Substantial Completion, covering the following:
   1. Shade Hardware: One year.
   2. Fabric: One year.
   3. Aluminum and Steel Coatings: One year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manually Operated, Roller Shades:
   1. Mecho Systems Dual Roller type shade systems.(Basis of Design)
   2. Architect approved equivalent
   3. Substitutions: See Section 016100 - Product Requirements and Section 012500 - Substitution Procedures.

B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

2.02 WINDOW SHADE APPLICATIONS

A. Shades at windows as indicated:
   1. Type: Roller shades.
   2. Fabric: As selected by the Architect from the manufacturer's full line of fabrics..
   3. Color: As selected by Architect/Engineer from manufacturer’s full range of colors.
   4. Mounting: Inside and outside, where indicated on drawings.
   5. Operation: Manual.

2.03 DUAL ROLLER SHADES

A. Roller Shades Type RS-1 - Basis of Design: MechoShade Systems LLC; www.mechoshade.com/#sle.
   1. Description: Double roller, motor operated fabric window shade system complete with mounting brackets, roller tubes, hembars, hardware, and accessories.
      a. Drop Position: Regular roll.
      b. Mounting: Recess mounted in ceiling pocket.
      c. Size: As indicated on drawings.
      d. Rear Roller Shade Material:
         1) Classic Blackout 0700 Series. Fire rating: NFPA 701 1006-Test 1. Washable and stain resistant. Wt. 12 oz/sq yd. Same color both sides, .015 inches thick.
      e. Front Roller Shade Material:
         1) Fabric: Ecosheer 6750 Series (3%) open or As indicated on the Shade schedule on the drawings .
         2) Color: Adobe 6756, as indicated on the drawings, and as selected by the Architect from the manufacturer's full color offering.
   2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
      a. Double Roller Brackets: Configured for light-filtering and room-darkening shades in one opening.
         1) Light-Filtering Fabric: Room-side of opening.
         2) Room-Darkening Fabric: Glass-side of opening.
   3. Roller Tubes:
      a. Material: Extruded aluminum.
      b. Size: As recommended by manufacturer; selected for suitability for installation conditions, span, and weight of shades.
      c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge. Shade band to be removable and replaceable without removing roller tube from brackets or inserting spline from the side of the roller tube.
   4. Hembars: Designed to maintain bottom of shade straight and flat.
      a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.

b. Room-Darkening Shades: Provide a slot in bottom bar with wool-pile light seal.

5. Accessories:
   a. Fascia: Removable extruded aluminum fascia, size as required to conceal shade mounting, attachable to brackets without exposed fasteners; baked enamel finish.
      1) Fascia to be capable of installation across two or more shade bands in one piece.
      2) Color: As indicated on the Shade Schedule or as selected by the Architect..
      3) Profile: Square.
      4) Configuration: Captured and continuous, as indicated on drawings.
   b. Ceiling Pockets: Premanufactured metal shade pocket with removable closure panel, for recess mounting in acoustical tile or drywall ceilings; size and configuration as indicated on drawings.
   c. Room-Darkening Channels, Standard: Extruded aluminum side and center channels with brush pile edge seals, SnapLoc mounting base, and concealed fasteners. Channels to accept one-piece exposed blackout hembar to assure side light control and sill light control.

B. Roller Shades: Type _____ -
   1. Fabric Dual roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory-assembled.
   2. Drop: Regular roll.
   3. Size: As indicated on drawings.
   4. Unit designed to accommodate two types of fabric shade each on separate roller.
   5. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation; PVC-free; 100 percent recycled.
      a. Rear Roller Shade Material:
         1) SunBloc Series SB9000: Close woven fiberglass base textile with sun-resistant vinyl film bonded to each side, opaque with minimum tensile strength of 190 pounds for warp and 180 pounds for fill. Fire rating: NFPA 701 1006-Test 1. Washable and stain resistant. Wt. 12 oz/sq yd. Same color both sides, .015 inches thick.
      b. Front Roller Shade Material:
         1) As selected by the Architect from the Manufacturer's full line of fabrics.
         2) As indicated on the Shade Schedule on the drawings.
         3) Flammability: Pass NFPA 701 large and small tests.
         4) Fungal Resistance: No growth when tested according to ASTM G21.
   6. Roller Tube: As required for type of operation, extruded aluminum with end caps.
      a. Rollers: Fabricated from steel or extruded aluminum. 2 inch Diameter, .080 inch wall thickness. Provide with roller idler assembly of molded nylon and zinc-plated steel pin. Sliding pin to allow easy installation and removal of roller.
      b. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.
      c. Finish: Clear anodized.
   7. Hembars and Hembar Pockets: Wall thickness designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
      a. Style: Thermally sealed fabric pocket covering rectangular aluminum hembar.
   8. Manual Operation: Clutch operated continuous loop; beaded ball chain.
      a. Bead Chain Clutch Operator: Provide bi-directional, for mounting at either end of roller, chain and bead clutch operating mechanism fabricated from high carbon steel and molded fiberglass-reinforced polyester thermopolymer (PBT), allowing shade to stop when chain is released. Designed to eliminate the need for adjustment. Provide preset limit stops to prevent shade from being raised or lowered too far.
         1) Bead Chain: #10 stainless steel chain with 120 pound breaking strength or polyester bead chain].

9. Coupling system: Provide system to operate 2 shades from single operator by coupling shade rollers together. System to consist of bearing brackets and male and female couplings.
10. Equip shade on rear roller with channels to prevent light leakage and provide total blackout:
    a. Side channels: Double chamber fabricated from extruded aluminum sections. One chamber accepts fabric and contains groove for fabric retainer. Other chamber accepts fabric guide and channel locator.
    b. Sill channel: Extruded aluminum channel to receive slat bar and prevent light leakage.

2.04 ACCESSORIES

A. Endcaps: 1028 steel stamping. Complete with adapter roller bracket. Installs to wall or ceiling. Accepts fascia.

B. Nominal size: 4-3/4 inches deep by 7 inches high by length required by window opening, with a return of 1-11/16 inches.

C. Fascias: Size as required to conceal dual shade mounting.
1. Fascia: L-shaped cover of extruded aluminum, 0.060 wall. Assembly snaps onto endcaps without exposed fasteners. Clear Anodized (standard) or color powder coat finish as selected by the Architect / Owner.
2. Style: As selected by Architect/Engineer from shade manufacturer's full selection.

D. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.

E. Pocket Head Box Installation:
1. Housing case:
    a. Rectangular enclosure for two rollers fabricated from 18 Gauge steel with white paint finish.
    b. Housing designed to be installed separately from shade as part of ceiling system installation. Shade and operating mechanism can be site installed later after construction operations that might damage shade are complete.
    c. Nominal size: 6-1/2 inches wide by 8-1/2 inches deep by length required by window opening.
    d. Closure panel: Extruded aluminum bottom closure panel forms slot for passage of shades and is removable for access to shades and operating mechanisms.

F. Number Plates: Number each opening and shade. Provide aluminum number plates for each shade unit and each opening. Fasten shade plate to the back of roller. Fasten opening plate on unexposed surface of the opening.

G. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

H. Rescue Window Labels: One window and associated shade per classroom or teaching area shall be deemed a "rescue window", for egress in case of emergency. All rescue windows shall comply with SED regulations and applicable codes and shall include a conforming label. At a minimum, provide the following:
1. Letters: bright yellow background with black letters
2. Label size: 3 inches high by 5 inches wide
3. Text: the words "RESCUE WINDOW" must be visible from Interior and Exterior sides of each rescue window.
4. Any window treatment/coverings at each of these locations must also have labels.
5. Visible window operating instructions shall be provided if operation is not readily apparent.

2.05 ROLLER SHADE FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Fabricate shades to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch (13 mm) space between bottom bar and window stool.
   2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.
   3. Horizontal Dimensions - Outside Mounting: Cover window frames, trim, and casings completely.

C. Dimensional Tolerances: As recommended in writing by manufacturer.

D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine finished openings for deficiencies that may preclude satisfactory installation.

B. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

C. Start of installation shall be considered acceptance of substrates.

3.02 PREPARATION

A. Field verify window dimensions prior to fabrication.

B. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

C. Coordinate with window installation and placement of concealed blocking to support shades.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.

B. Installation Tolerances:
   1. Maximum Offset From Level: 1/16 inch (1.5 mm).

C. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.04 CLEANING

A. Clean soiled shades and exposed components as recommended by manufacturer.

B. Replace shades that cannot be cleaned to "like new" condition.

3.05 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.

B. Training: Train Owner's personnel on operation and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

3.06 PROTECTION

A. Protect installed products from subsequent construction operations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Piping insulation

B. Insulation jackets

C. Adhesives, mastics, and sealers

D. Miscellaneous materials

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Penetration Firestopping: Section 078413.

B. Painting: Section 099103.

C. Pipe Hangers and Supports: Section 210529.

1.03 ABBREVIATIONS

A. FS: Federal Specification.

B. K: Thermal Conductivity, i.e., maximum Btu per inch thickness per hour per square foot.

C. pcf: Pounds per cubic foot.

D. PVC: Polyvinylchloride.

1.04 SUBMITTALS

A. Product Data: Manufacturer's catalog sheets, specifications and installation instructions for the following:
   1. Insulation Materials.
   2. Jacket Materials.

B. Quality Control Submittals:
   1. Installers Qualification Data:
      a. Name of each person who will be performing the Work, and their employer's name, business address and telephone number.
      b. Furnish names and addresses of the required number of similar projects that each person has worked on which meet the qualifications.

1.05 QUALITY ASSURANCE

A. Qualifications: The persons installing the Work of this Section and their Supervisor shall be personally experienced in mechanical insulation work and shall have been regularly employed by a company installing mechanical insulation for a minimum of 5 years.

B. Regulatory Requirements:
   1. Insulation installed inside buildings, including laminated jackets, mastics, sealants and adhesives shall have a Fire Spread/Smoke Developed Rating of 25/50 or less based on ASTM E 84.

PART 2 PRODUCTS

2.01 PIPING INSULATION

A. Fibrous Glass (Mineral Fiber) Insulation: Composed principally of fibers manufactured from rock, slag, or glass, with or without binders, and asbestos free.
   1. Preformed Pipe Insulation: Minimum density 3 pcf; ASTM C 547:
      a. Class 1 (Suitable for Temperatures Up to 450 degrees F): K of 0.26 at 75 degrees F.
   2. Premolded Fitting Insulation: Minimum density 4.0 pcf, K of 0.26 at 75 degrees F; ASTM C 547, Class 1.
   3. Insulation Inserts for PVC Fitting Jackets: Minimum density 1.5 pcf, K of 0.28 at 75 degrees F; ASTM C 553, Type III.
      a. Suitable for temperatures up to 450 degrees F.

B. Flexible Elastomeric Foam Insulation:
   1. FM tested and approved, meeting the following:
      a. Maximum Water Vapor Transmission: 0.10 perm - inch based on ASTM E 96, Procedure A.
      b. K of 0.27 at 75 degrees F based on ASTM C 518 or C 177.
      c. Fire Spread/Smoke Developed Rating: 25/50 or less based on ASTM E 84.
   2. Pipe Insulation: ASTM C 534, Type I.
   3. Polyethylene and polyolefin insulation is not acceptable.

C. High Density Jacketed Insulation Inserts for Hangers and Supports:
   1. For Use with Fibrous Glass Insulation:
      a. Cold Service Piping:
         1) Polyurethane Foam: Minimum density 4 pcf, K of 0.13 at 75 degrees F, minimum compressive strength of 125 psi.
   2. For Use with Flexible Elastomeric Foam Insulation: Hardwood dowels and blocks, length or thickness equal to insulation thickness, other dimensions as specified or required.

D. Cements:
   1. Fibrous Glass Thermal Insulating Cement: Asbestos free; ASTM C 195.
   2. Fibrous Glass Hydraulic Setting Thermal Insulating and Finishing Cement: ASTM C 449/C 449M.

2.02 INSULATION JACKETS

A. Laminated Vapor Barrier Jackets for Piping: Factory applied by insulation manufacturer, conforming to ASTM C 1136, Type I.
   1. Type I: Reinforced white kraft and aluminum foil laminate with kraft facing out.
      a. Pipe Jackets: Furnished with integral 1-1/2 inch self sealing longitudinal lap, and separate 3 inch wide adhesive backed butt strips.
   2. Laminated vapor barrier jackets are not required for flexible elastomeric foam insulation.

B. Canvas Jackets: Cotton duck, fire retardant, complying with NFPA 701, 4 oz or 6 oz per sq yd as specified.

C. Premolded PVC Fitting Jackets:
   1. Constructed of high impact, UV resistant PVC.
      a. ASTM D 1784, Class 14253-C.
      b. Working Temperature: 0-150 degrees F.

2.03 ADHESIVES, MASTICS, AND SEALERS

A. Lagging Adhesive (Canvas Jackets): Childers' CP-50A, Epolux's Cadalag 336, Foster's 30-36.

B. Vapor Seal Adhesive (Fibrous Glass Insulation): Childers' CP-82, Epolux's Cadoprene 400, Foster's 85-75 or 85-20.

C. Vapor Barrier Mastic/Joint Sealer (Fibrous Glass Insulation): Childers' CP-30, Epolux's Cadalar 670, Foster's 95-44 or 30-35.

D. Adhesive (Flexible Elastomeric Foam): Armstrong's 520, Childers' CP-80, Epolux's Cadoprene 488, Foster's 82-40.

E. Adhesive (Reinforcing Membrane): Childers' Chil-Spray WB CP-56.

F. Mastic (Reinforcing Membrane): Childers' AK-CRYL CP-9.

2.04 MISCELLANEOUS MATERIALS

A. Pressure Sensitive Tape for Sealing Laminated Jackets:
   1. Acceptable Manufacturers: Alpha Associates, Childers, Ideal Tape, Morgan Adhesive.
   2. Type: Same construction as jacket.

B. Wire, Bands, and Wire Mesh:
   1. Binding and Lacing Wire: Nickel copper alloy or copper clad steel, gage as specified.
   2. Bands: Galvanized steel, 1/2 inch wide x 0.015 inch thick, with 0.032 inch thick galvanized wing seals.
   3. Wire Mesh: Woven 20 gage steel wire with 1 inch hexagonal openings, galvanized after weaving.

C. Reinforcing Membrane: Glass or Polyester, 10 x 10 mesh. Alpha Associates Style 59, Childer's Chil-Glas, Foster's MAST-A-FAB.

PART 3 EXECUTION

3.01 PREPARATION

A. Perform the following before starting insulation Work:
   1. Install hangers, supports and appurtenances in their permanent locations.
   2. Complete testing of piping.
   3. Clean and dry surfaces to be insulated.

3.02 INSTALLATION, GENERAL

A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions unless otherwise specified.

B. Provide continuous piping insulation and jacketing when passing thru interior wall, floor, and ceiling construction.
   1. At Through Penetration Firestops: Coordinate insulation densities with the requirements of approved firestop system being installed. See 078400.
      a. Insulation densities required by approved firestop system may vary with the densities specified in this Section. When this occurs use the higher density insulation.

C. Do not intermix different insulation materials on individual runs of piping.

3.03 INSTALLATION AT HANGERS AND SUPPORTS

A. Reset and realign hangers and supports if they are displaced while installing insulation.

B. Install high density jacketed insulation inserts at hangers and supports for insulated piping.

C. Insulation Inserts For Use with Fibrous Glass Insulation:
   1. Where clevis hangers are used, install insulation shields and high density jacketed insulation inserts between shield and pipe.
      a. Where insulation is subject to compression at points over 180 degrees apart, e.g. riser clamps, U-bolts, trapezes, etc.; fully encircle pipe with 2 protection shields and 2 high density jacketed fibrous glass insulation inserts within supporting members.
         1) Exception: Locations where pipe covering protection saddles are specified for hot service piping, 6 inch and larger.

D. Insulation Inserts For Use with Flexible Elastomeric Foam Insulation:
   1. Where clevis hangers are used, install insulation shields with hardwood filler pieces, same thickness as adjoining insulation, inserted in undersized die cut or slotted holes in insulation at support points.
   2. Contour hardwood blocks to match the curvature of pipe, and shield.
   3. Coat dowels and blocks with insulation adhesive, and insert while still wet.
   4. Vapor seal outer surfaces of dowels and blocks with adhesive after insertion.
   5. Install filler pieces as follows:

PIPE/TUBING SIZE	FILLER PIECES	POSITION
Thru 1-1/2”	2 dowel plugs	6 o’clock; in tandem
2” thru 4”	1 block, 2 dowel plugs	6 o’clock, and 4 & 8 o’clock respectively
6” thru 8”	2 blocks, 4 dowel plugs	6 o’clock; in tandem and 4 & 8 o’clock; in tandem

3.04 INSTALLATION OF FIBROUS GLASS COLD SERVICE INSULATION

A. Install insulation materials with a field or factory applied ASTM C 1136 Type I laminated vapor barrier jacket, unless otherwise specified.

B. Piping:
   1. Butt insulation joints together, continuously seal minimum 1-1/2 inch wide self-sealing longitudinal jacket laps and 3-inch wide butt adhesive backed strips.
      a. Substitution: 3 inch wide pressure sensitive sealing tape, of same material as jacket, may be used in lieu of butt strips.
   2. Bed insulation in a 2-inch wide band of vapor barrier mastic, and vapor seal exposed ends of insulation with vapor barrier mastic at each butt joint between pipe insulation and equipment, fittings or flanges at the following intervals:
      a. Horizontal Pipe Runs: 21 ft.
      b. Vertical Pipe Runs: 9 ft.

C. Fittings, Valves, Flanges and Irregular Surfaces:
   1. Insulate with mitre cut or premolded fitting insulation of same material and thickness as pipe insulation.
   2. Secure insulation in place with 16-gage wire, with ends twisted and turned down into insulation.

3. Butt insulation against pipe insulation and bond with joint sealer.
4. Insulate valves up to and including bonnets, without interfering with packing nuts.
5. Apply leveling coat of insulating cement to smooth out insulation and cover wiring.
6. When insulating cement has dried, seal fitting, valve and flange insulation, by imbedding a layer of reinforcing membrane or 4 oz. canvas jacket between 2 flood coats of vapor barrier mastic, each 1/8 inch thick wet.
7. Lap reinforcing membrane or canvas on itself and adjoining pipe insulation at least 2 inches.
8. Trowel, brush or rubber glove outside coat over entire insulated surface.
9. Exceptions:
    a. Type D Piping Systems: Valves, fittings and flanges may be insulated with premolded PVC fitting jackets, with fibrous glass insulation inserts.
        1) Additional insulation inserts are required for services with operating temperatures under 45 degrees F or where insulation thickness exceeds 1-1/2 inches. The surface temperature of PVC fitting jacket must not go below 45 degrees F.

3.05 INSTALLATION OF FLEXIBLE ELASTOMERIC FOAM INSULATION

A. Where possible, slip insulation over the pipe, and seal butt joints with adhesive.
    1. Where the slip-on technique is not possible, slit the insulation and install.
    2. Re-seal with adhesive, making sure the mating surfaces are completely joined.

B. Insulate fittings and valves with miter cut sections. Use templates provided by the manufacturer, and assemble the cut sections in accordance with the manufacturer's printed instructions.
    1. Insulate threaded fittings and valves with sleeved fitting covers. Over lap and seal the covers to the adjoining pipe insulation with adhesive.

C. Carefully mate and seal with adhesive all contact surfaces to maintain the integrity of the vapor barrier of the system.

D. Piping Exposed Exterior to a Building, Totally Exposed to the Elements:
    1. Apply flexible elastomeric foam insulation to piping with adhesive.
    2. Apply reinforcing membrane around piping insulation with adhesive or mastic.
    3. Adhesive Applied System: Apply 2 coats of finish. See Section 099103.
    4. Mastic Applied System: Apply another coat of mastic over reinforcing membrane.

3.06 FIELD QUALITY CONTROL

A. Field Samples: The Director's Representative, may at their discretion, take field samples of installed insulation for the purpose of checking materials and application. Reinsulate sample cut areas.

END OF SECTION

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Valves and accessories
   1. Gate valves
   2. Inspector's test outlet valve
   3. Valve locking devices
   4. Alarm check valve
   5. Check valves
   6. Pressure gages
   7. Inspector's test connection

B. Sprinkler heads and appurtenances

C. Fire department connection

D. Water flow alarm device

E. Electrical alarm gong

F. Valve supervisory switches

G. Signs

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Interior Painting: Section 099123.

B. Backflow Preventers: Section 210524.

C. Hangers and Supports: Section 210529.

D. Sprinkler Systems: Section 211300.

E. Motors and Motor Controllers: Section 260221.

1.03 REFERENCES

A. NFPA 13 - National Fire Protection Association Standard for the Installation of Sprinkler Systems.

1.04 SYSTEM DESCRIPTION

A. Type of System:
   1. Wet System

1.05 SUBMITTALS

A. Shop Drawings:
   1. Complete sprinkler system layout indicating the locations of sprinkler heads, devices, and accessories. Include separate details of special or not easily visualized piping arrangements and inspector’s test valves and connections.
   2. Hydraulic calculations shall be complete and cross referenced to the appropriate drawing sheets.

B. Product Data: Catalog sheets, specifications, and installation instructions. Indicate UL or FM approval for each product. Include the following additional information:
   1. Electrical Devices: Complete description of intended use, wiring diagrams, data plate information and, in the case of switching devices, whether normally on, or normally off. Include motor test data.
   2. Mechanical Devices: Complete description of intended use, including normal operating capacities and working pressures.
   3. Enclosures: Dimensions, materials, gages of metals; type of door hinges and locks, and methods of securing the enclosure members to the building construction.
   4. Hose Threads: Verify that hose threads on fire department connections match threads on equipment used by the local or servicing fire department.

C. Quality Control Submittals:
   1. Design Data: The portions of the sprinkler system not sized on the Contract Drawings shall be sized in accordance with NFPA requirements for Hydraulically Designed Systems. Submit drawings and hydraulic calculations for approval.
   2. Certificates: As required under Quality Assurance Article.
   3. Installers Qualification Data:
      a. Name of each person who will be performing the Work.
      b. Upon request, furnish names and addresses of the required number of similar projects that each person has worked on which meet the experience criteria.

D. Contract Closeout Submittals:
   1. Operation and Maintenance Data. Deliver 2 copies to the Director's Representative:
      a. Instruction manual describing the operation and maintenance of the system.
      b. Parts list for each mechanical and electrical device.
      c. Publication NFPA 25, Inspection, Testing, and Maintenance of Water Based Fire Protection Systems.

1.06 QUALITY ASSURANCE

A. Qualifications: The persons employed to perform the Work of this Section and their supervisor shall be personally experienced in sprinkler work and shall have been regularly performing such work for a minimum of 5 years while in the employ of a company or companies engaged in the installation of sprinkler systems.
   1. Upon request, furnish to the Director the names and addresses of five similar projects which the foregoing people have worked on during the past 3 years.

B. Regulatory Requirements:
   1. Materials for the Work of this Section shall be Underwriter's Laboratories listed, and/or Factory Mutual approved.

C. Certification: NFPA Contractor's Material and Test Certificate.

1.07 MAINTENANCE

A. Spare Parts: Furnish the following items and deliver to the Owner for storage in spare sprinkler head cabinets:
   1. Spare sprinkler heads of each temperature range:
   2. One sprinkler head wrench to fit each type sprinkler head.

PART 2 PRODUCTS

2.01 VALVES AND ACCESSORIES

A. Gate Valves (175 psig non-shock working pressure):
   1. 3/4 inch to 2 inch: Bronze body, OS & Y indicating type; double or wedge disc with threaded ends.
   2. 2-1/2 inch and larger: IBBM, OS & Y indicating type; double or wedge disc with end connections as required to suit the piping system.

B. Inspector's Test Outlet Valve: Ball type, bronze body, Type 316 stainless steel ball and stem, teflon seats and stem packing, 400 psi WOG. Valve shall have padlocking feature in both the open and closed position.

C. Valve Locking Devices:
   1. Chain: 3/16 inch galvanized steel, welded link.
   2. Padlock: Series 800 by Yale, Eaton Corp., Charlotte, NC: Key all locks alike. Furnish 2 keys for each lock.
   3. Key Tags: 1-1/2 inch dia., brass, stamped with valve number and service.
   4. "S" Hooks: Brass, for securing keys to key tags.

D. Alarm Check Valve:
   1. Two piece cast iron body, bolted and gasketed.
   2. Moving parts brass, bronze, or stainless steel with replaceable rubber clapper facing.
   3. Right or left hand trimming as required.
   4. Suitable for horizontal or vertical installation.
   5. Two pressure gages.
   6. Main drain tap.
   7. Factory finish with corrosion resistant red paint.
   8. Trim Package: Angle valve, globe valve, alarm line strainer, orifice restriction, pipe nipples and fittings.

E. Check Valves: IBBM, single clapper swing check with metal to metal or rubber faced checks, suitable for horizontal and vertical installation; end connections as required to suit the piping system; 175 psig non-shock working pressure.
   1. Ball Drip (where shown on Drawings): Brass, automatic; threaded on both ends.

F. Pressure Gages: Range of 2 times system working pressure at point where installed. Equip with gage cock and provisions for draining.

G. Inspector's Test Connection: Cast brass, capped, sprinkler line tester fitting; Elkhart Brass Mfg. Co.'s. No. 112, or Seco Mfg., Inc.'s No. 445 or 446.

2.02 SPRINKLER HEADS AND APPURTENANCES

A. Sprinkler Heads: Brass or bronze, with standard 1/2 inch orifice, and deflector:
   1. Upright or Pendent Type: Deflector designed to distribute water downward in a uniform hemispherical spray pattern.
   2. Dry Pendent Type: Designed to prevent water and condensation from being trapped below the drainable system piping.
   3. Flush Pendent Type: All or part of sprinkler body including shank thread mounts above lower plane of finished ceiling.
   4. Sidewall Type: Horizontal or vertical sprinklers with special deflectors designed to discharge most of the water away from nearby wall in a pattern resembling 1/4 of a sphere with a small portion of discharge directed at wall behind sprinkler.

5. Markings: Stamp sprinkler type on deflector in addition to NFPA's color code requirements covering temperature classification.

B. Spare Sprinkler Head Cabinet: Steel, with hinged cover, constructed of minimum 20 gage material and fitted with 16 gage steel racks designed to hold quantities and types of spare sprinkler heads and sprinkler head wrenches.
   1. Finish: Bright red, baked on enamel.

2.03 FIRE DEPARTMENT CONNECTION

A. Siamese Connection: Two way flush wall type, brass with polished finish; size 2-1/2 x 2-1/2 x 4 inch , with two 2-1/2 inch female connections, 2 individual drop clapper valves, plugs and chains, and escutcheon.
   1. Equip above with integral sillcock having hose bibb end, cap, chain and removable tee handle key. Furnish 2 keys. Deliver to the Owner.

B. Identification: Provide signage stating "AUTOSPKR", or "AUTOSPKR AND STANDPIPE" or as required by AHJ.

2.04 WATER FLOW ALARM DEVICE

A. Vane Type Waterflow Switch: System Sensor WFDN, Autocall Div., Federal Signal Corp.'s 4160, Potter Electric Signal Co.'s VSR-F, or Reliable's Model A., having:
   1. Corrosion-resistant vane.
   2. Splash/dust resistant enclosure with anti-tamper switch.
   3. Adjustable pneumatic retard.
   4. Screw type wiring terminals.

2.05 ELECTRIC ALARM GONG

A. 8 inch diameter vibrating bell; 24 V dc. Sound rating 80 db; System Sensor SSM24-8 or equal.
   1. Markings: The words FIRE ALARM in block lettering on a contrasting background.
   2. Mounting: Suitable for both wall and ceiling mounting.

2.06 VALVE SUPERVISORY SWITCHES

A. Mechanically actuated, designed to close contacts and sound an alarm when supervised valve is closed and when switch cover removed.
   1. For Gate Valves: System Sensor OSY2, Potter Electric Signal Co.'s OSYSU-A, or Grinnell's F640.
   2. For Post Indicator Valves: Potter Electric Signal Co.'s PIVSU-A2, or Potter-Roemer, Inc.'s 6223.

2.07 SIGNS

A. Steel with vitreous enamel finish, lettering on contrasting background to identify and indicate the function of:
   1. Control valves.
   2. Drain, test, air supply and alarm check valves.
   3. Water motor alarm.
   4. Anti-freeze loop.
   5. Anti-freeze loop drain and test valves.
   6. Hydraulic Design Nameplate Data: Size approx. 9 x 12 inches, inscribed with the following::
      a. SPRINKLER SYSTEM HYDRAULICALLY DESIGNED (in block letters).
      b. Location and area of hydraulically designed section.

c. Discharge density over designed area in gallons per minute.
d. Residual pressure at base of riser supplying water to designed section.

PART 3 EXECUTION

3.01 INSTALLATION

A. Unless otherwise shown or specified, install the Work of this section in accordance with NFPA 13, and the item manufacturer's installation instructions.

B. Locking Valves:
1. Lock gate valves in open position with chain looped through handwheel and around adjacent sprinkler pipe. Secure with padlock.
2. Lock test outlet valve in closed position with padlock.

C. Spare Sprinkler Head Cabinet: Secure to building wall or other permanent structure in vicinity of main valve controlling sprinkler system, unless otherwise directed.

D. Signs: Install signs identifying the following:
1. Valves: One for each size, type and function.
2. Fire Department Connection
3. Alarm Valves
4. Hydraulically Designed System.

3.02 FIELD QUALITY CONTROL

A. Tests: Unless otherwise shown or specified, perform tests in accordance with NFPA 13.
1. Flushing: In addition to the requirements of the Standard, flush new piping before making final connection to existing systems and before performing hydrostatic test. Flush at rates of flow prescribed in the Contractor's Material and Test Certificate. After making final connections, flush entire system and assure that debris is removed from piping and there are no stoppages or obstructions in the system.
2. System Tests:
a. Test all new Work.
b. Notify the Director's Representative when the Work of this Section is ready for testing.
c. Perform the tests when directed, and in the Director's Representatives presence.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The Work specified as part of this Section consists of the work required to achieve operational and coordinated Sequences of Operation as described. Work includes coordination of functions of controllers supplied as part of equipment packages, sizing of control valves, interconnection of systems, provision and installation of all accessory devices required for complete system operation including devices not provided as part of equipment, coordination of start up and testing and demonstration of the operation of Sequences of Operation to the Owner and his representatives.

B. The control system operation of all equipment shall be subject to the operational modes, conditions and logic described in this Section and the controlled equipment manufacturer's recommendations.

C. Training of the Owner's personnel in the operation, trouble shooting, adjustment and repair of all system controls.

1.02 RELATED SECTIONS AND WORK

A. Section 230923 - Automatic Temperature Controls and Building Automation System

B. Section 230991 - Instrumentation and Control Integration

C. Division 26 - Electrical Specifications

D. Owner's Building Management System (BMS)

E. Owner's Fire Alarm System (FAS)

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. General
   1. Conform to the requirements of the Owner's standards for all electrical work and devices.
   2. System and system components shall be BACNet compatible.
   3. All set points and operating points shall be able to be transmitted to and set from the BMS system. Specific points to be enabled shall be at the discretion of the Owner.
   4. All systems shall be capable of operating independently of the BMS system based on set points and limits either input from the BMS system or manually.
   5. Coordinate all work with the requirements and characteristics of the BMS system and the equipment provided for the project under this phase or earlier phases.
   6. All space sensors and thermostats shall have an LCD display indicating their set point, the condition sensed and the mode of operation they are responding to.
   7. All equipment to be integrated with the BMS shall be fully integrated with new or existing facility controls and devices including interlocks, icons, graphics, read-outs and reports.

3.02 SEQUENCE OF OPERATION - EXHAUST FANS, TE-X

A. General:

1. The exhaust fan shall run continuously 24 hours a day, 7 days a week.
2. Exhaust fans to be integrated to building BMS system for occupied, unoccpied, and fan failure.

3.03 SEQUENCE OF OPERATION - SPLIT SYSTEM DEDICATED OUTDOOR AIR UNIT, DOAS-1/DOAS-2

A. Run Conditions - Scheduled:
   1. The unit shall run according to a user definable time schedule.

B. Outside Air Damper:
   1. The outside air damper shall open anytime the unit runs and shall close anytime the unit stops. The supply fan shall start only after the damper status has proven the damper is open.
   2. The outside air damper shall close 4sec (adj.) after the supply fan stops.
   3. Alarms shall be provided as follows:
      a. Outside Air Damper Failure: Commanded open, but the status is closed.
      b. Outside Air Damper in Hand: Commanded closed, but the status is open.

C. Supply Fan:
   1. The supply fan shall run anytime the unit is commanded to run. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime, unless shutdown on safeties.
   2. Alarms shall be provided as follows:
      a. Supply Fan Failure: Commanded on, but the status is off.

D. Zone Temperature Control:
   1. The controller shall monitor the supply air temperature and shall maintain a supply air temperature of 70 degrees.

E. Hot Gas Reheat Mode:
   1. When the supply fan is running and the unit is in Cooling mode the system monitors the leaving air temperature.
   2. The leaving air temperature will typically be within approximately ± 0.5 degree F of the leaving air temperature set point.
   3. If the leaving air temperature is greater than 72 degree F, then the hot gas reheat mode will be disabled.

F. Dehumidification:
   1. If the leaving air temperature set point is achieved, the controller will check leaving air humidity.
   2. If the leaving air humidity is 3% above the leaving air humidity set point, 60% RH, the digital compressor will ramp up in capacity as necessary to satisfy the leaving air humidity set point.
   3. If the leaving air temperature goes below the set point, modulating hot gas reheat will be enabled to maintain the leaving air temperature. The controlled will balance the capacity of the compressor and the use of hot gas reheat to first satisfy leaving air temperature and then, if necessary dehumidify.

G. Prefilter Status:
   1. The controller shall monitor the prefilter status.
   2. Alarms shall be provided as follows:
      a. Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).

H. Supply Air Temperature:

1. The controller shall monitor the supply air temperature.
2. Alarms shall be provided as follows:
   a. High Supply Air Temp: If the supply air temperature is greater than 120 degree F (adj.).
   b. Low Supply Air Temp: If the supply air temperature is less than 45 degree F (adj.).

I. System Points

	Hardware Points				Software Points						
Point Name	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Supply Air Temp	x								x		x
Modulating Gas Heat		x							x		x
Outside Air Damper Status			x						x		x
Supply Fan Status			x						x		x
Prefilter Status			x						x		
Outside Air Damper				x					x		x
Supply Fan Start/Stop				x					x		x
Cooling Stage 1				x					x		x
Cooling Stage 2				x					x		x
Supply Air Temp Set Point					x				x		x
Outside Air Damper Failure										x	
Supply Fan Failure										x	
High Supply Air Temp										x	
Low Supply Air Temp										x	
Totals	**1**	**1**	**3**	**4**	**1**	**0**	**0**	**0**	**10**	**4**	**9**

Total Hardware (12) **Total Software (18)**

3.04 SEQUENCE OF OPERATION - VARIABLE REFRIGERANT FLOW (VRF) UNITS

A. Cooling Operation:
   1. The unitary controller will call for cooling when measured room temperature is 1.8FDB above setpoint and adjust refrigerant flow and capacity based on differential from setpoint. The unit will remain in an active call for cooling until the measured room temperature is 1.8FDB below setpoint.
   2. The indoor fan will operate based on user selected fan speed setting at the unitary controller and will allow for High, Medium, and Low selection. The fan speed will remain constant in the cooling mode regardless of the cooling cycle being called for.
   3. (User fan speed control should be disabled in applications where OA is ducted into the terminal unit)

B. Heating Operation
   1. The unitary controller will call for heating when measured room temperature is 1.8FDB below setpoint and adjust refrigerant flow and capacity based on differential from setpoint. The unit will remain in an active call for heating until the measured room temperature is 1.8FDB above setpoint.

2. The indoor fan will operate based on user selected fan speed setting at the unitary controller and will allow for High, Medium, and Low selection. The fan speed will remain constant during heating/and or cooling operation.

C. Mode Changeover
   1. Mode changeover shall be configured through the Building Management System controller.

END OF SECTION 230993

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work specified as part of this Section consists of the integration of equipment controls supplied as part of manufactured items, materials and equipment required by the Drawings and under Divisions 23 and 26 to achieve operational and coordinated Sequences of Operation as Specified. Work shall include management of the system start up and operational check out, coordination of functions of controllers supplied as part of equipment packages, sizing of control valves and damper operators for dampers, interconnection of systems, provision and installation of all accessory devices required for complete system operation including dampers, control valves and actuators not provided as part of equipment, coordination of start up and testing and demonstration of the operation of Sequences of Operation to the Owner and his representatives.

1.02 RELATED SECTIONS

A. The General Conditions of the Contract, Supplementary Conditions, and General Requirements are a part of these Specifications and shall be used in conjunction with this Section as a part of the Contract Documents. Consult them for further instructions pertaining to this work. The Contractor is bound by the provisions of Division 00 and Division 01.

B. The following Sections constitute related work:
   1. Section 230010 - General Mechanical Requirements
   2. Equipment and Systems specified under Division 23
   3. Division 26

1.03 QUALITY ASSURANCE

A. Codes and Standards: Meet requirements of all applicable standards and codes, except when more detailed or stringent requirements are indicated by the Contract Documents, including requirements of this Section.
   1. Underwriters Laboratories: Products shall be UL-916-PAZX listed.
   2. National Electrical Code - NFPA 70.

B. All products used in this installation shall be new, currently under manufacture, and shall have been applied in similar installations for a minimum of 2 years. This installation shall not be used as a test site for any new products unless explicitly approved by the Owner's representative in writing prior to bid date. Spare parts shall be available for at least 5 years after completion of this Contract.

1.04 SUBMITTALS

A. Contractor shall provide shop drawings and manufacturer’s standard specification data sheets on all materials and hardware to be provided. No work may begin on any segment of this project until the Architect/Engineer and Owner have reviewed submittals for conformity with the Drawings and Specifications. All shop drawings shall be provided to the Owner electronically as .dwg or .dxf file formats.

B. Submit a written sequence of operation for each system indicating which functions are to be controlled by controls provided as part of manufactured equipment and which functions will be under control of devices provided as part of this Section.

C. Submit interconnecting wiring diagrams for all systems. These diagrams may rely on diagrams for controls of manufactured equipment provided that the interface points are clearly identified

and copies of the manufactured item's control diagrams are submitted for information as part of the submittal package.

D. Submit any additional information or data which is deemed necessary to determine compliance with these specifications or which is deemed valuable in documenting the system to be installed.

E. Submit the following within 30 days of contract award:
   1. A work plan and schedule for the start up and check out of all systems including time requirements and resources required from all Sub-Contractors involved.
   2. A complete list of equipment to be used indicating quantity, manufacturer and model number.
   3. A schedule of all control valves including the valve size, model number (including pattern and connections), flow, CV, pressure rating, and location.
   4. A schedule of all control dampers. This shall include the damper size, pressure drop, manufacturer and model number.
   5. Provide manufacturers cut sheets for major system components. When manufacturer's cut sheets apply to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submitted piece of literature and drawings shall clearly reference the specification and/or drawing that the submittal is being submitted to cover.
   6. The submittals required under this Section shall be considered as For Information Only. Review by the Architect/Engineer shall not relieve the Contractor from the responsibility of providing fully operational systems.

1.05 WARRANTY

A. Warrant all work as follows:
   1. Labor & materials for control system specified shall be warranted free from defects for a period of twelve (12) months after final completion acceptance by the Owner. Control System failures during the warranty period shall be adjusted, repaired, or replaced at no charge or reduction in service to the Owner. The Contractor shall respond to the Owner's request for warranty service within 24 hours during customary business hours.
   2. At the end of the final start-up/testing, if equipment and systems are operating in a manner satisfactory to the Owner and Architect/Engineer, the Owner shall sign certificates certifying that the control system's operation has been tested and accepted in accordance with the terms of this Specification. The date of Owner's acceptance shall be the start of warranty.

1.06 OVERVIEW

A. Provide a new Schneider Electric "EcoStruxure" building automation system (BAS) for control and monitoring of all HVAC equipment installed under this project. The new BAS shall include the following:
   1. Add AS-P IP controller to the building.
   2. Bring AS-P into White Plains site wide Enterprise Server.
   3. Provide workstation on District BMS VLAN.
   4. MP-C / RP-C field controllers for equipment.
   5. Provide new Controller code and Graphics.
   6. Maintain and migrate over all sequences of operations, control points, and monitoring points for all existing-to-remain equipment.

B. Upon completion of BAS installation, District personnel shall be able to control and monitor all HVAC equipment in the building via a single graphical interface and shall be able to access the graphical interface remotely via web browser or cellphone application.

C. Provide seamless integration with existing control network and user interfaces. Network gateways and protocol interface equipment are not acceptable.

D. The automatic temperature controls contractor for the district is Stark Tech – Attn: Jason Kross - krossj@starktech.com – (518) 312-6086 mobile. The mechanical contractor shall hire Stark Tech as a sub-contractor to perform all automatic temperature controls work under this project.

PART 2 - PRODUCTS

2.01 STANDARD OF QUALITY AND PERFORMANCE

A. Products specified are not intended to form a complete scope of supply. They are intended to set a level of quality for items that the Contractor may need to supply to implement a complete Sequence of Operation. Products of a comparable quality and performance may be submitted for approval by the Architect/Engineer.

2.02 MOTORIZED DAMPERS

A. Dampers shall be modulating double-acting opposed blade or parallel blade dampers as required, designed and tested in accordance with AMCA 500, and meeting current energy code. Obtain and verify the location, size and pressure rating of each damper prior to fabrication and delivery. Verify the layout of equipment and ductwork before dampers are fabricated. Pressure drop shall not exceed 0.03 inches water gauge static pressure at 1000 fpm in the fully-open position, and shall be rated for at least 2000 fpm average velocity. Damper shut-off pressure rating shall exceed the fan maximum total head-pressure.

B. Dampers shall be constructed of extruded aluminum or at least No. 16 gauge galvanized steel, with each blade being not more than 8 inches; wide damper frame channel shall be at least 5 inches deep. Each blade end shall have a 3/8 inch stainless steel or plated steel shaft rotating in self-lubricating bearings mounted in a damper channel frame. Blades mounted vertically shall be supported by thrust bearings. Control shaft shall be at least ½ inch diameter.

C. Flat-steel damper blades shall be made rigid by folding the edges. Blades shall have interlocking edges and shall be provided with EPDM or neoprene compressible seals at point of contact. Foam seals are not acceptable. Provide compression-type stainless steel jamb seals continuously along blade edges.

D. Each damper shall be assembled in the manufacturer’s shop as a complete unit. Dampers, when closed, shall be guaranteed by the manufacturer not to leak in excess of 20 cfm per square foot at 4 inches w.g. static pressure. Provide dampers with operators having sufficient power to limit leakage to the rate specified.

E. Damper seals shall be suitable for an operating range of minus 20 degrees F (or 20 degrees F below the heating outside design temperature, whichever is lower) at the lower end to 200 degrees F at the upper end.

F. A complete damper assembly shall have blades no longer than 48 inches and no higher than 48 inches. Where greater length or height is required, the assembly shall be made of a combination of sections. Dampers shall be sized for the required air velocity and pressure classification.

G. Approved Manufacturers: Greenheck (VDC-23), Arrow or approved equal.

2.03 ELECTRONIC DAMPER/VALVE ACTUATORS

A. The actuator shall have electronic overload or digital rotation sensing circuitry to prevent damage to the actuator throughout the rotation of the actuator.

B. For power-failure/safety applications, an internal mechanical, spring return mechanism shall be built into the actuator housing.
   1. Damper actuators shall fail normally open or closed as described on the Drawings or as follows:
      a. Outdoor Air Intake - normally closed.
      b. Air Exhaust - normally closed.
      c. Other applications - as as required by the Sequence of Operation.

C. All rotary spring return actuators shall be capable of both clockwise and counter clockwise spring return operation.

D. Proportional actuators shall accept a 0-10 VDC or 0-20 ma control signal and provide a 2-10 VDC or 4-20 ma operating range.

E. All 24 VAC/DC actuators shall operate on Class 2 wiring and shall not require more than 10 VA for AC or more than 8 W for DC applications. Actuators operating on 120 VAC or 230 VAC shall not required more than 11 VA.

F. All non-spring return actuators shall have an external manual gear release to allow manual positioning of the damper when the actuator is not powered. Spring return actuators with more than 60 in-lb. torque capacity shall have a manual crank for this purpose.

G. Actuators shall be provided with a conduit fitting and a minimum 1 meter electrical cable and shall be pre-wired to eliminate the necessity of opening the actuator housing to make electrical connections.

H. All modulating actuators shall have an external, built-in switch to allow the reversing of direction of rotation

I. Actuators shall be Underwriters Laboratories Standard 873 listed.

J. Actuators shall be designed for a minimum of 60,000 full stroke cycles at the actuator's rated torque.

K. Provide a single damper actuator when dampers are less than 4 feet in width. Otherwise provide two damper actuators (one on each side of the ductwork).

2.04 CONTROL VALVES

A. Control valves shall be two-way or three-way type for two-position or modulating service as required.

B. Close-off (differential) Pressure Rating: Valve actuator and trim shall be furnished to provide the following minimum close-off pressure ratings:
   1. Water Valves:
      a. Two-way: 150% of total system (pump) head.
      b. Three-way: 300% of pressure differential between ports A and B at design flow or 100% of total system (pump) head.
   2. Steam Valves: 150% of operating (inlet) pressure.

C. Valve Failure Position:
   1. Valves shall fail normally open or closed as indicated on the Drawings or as follows:
      a. Heating coils in air handlers - normally open.
      b. Chilled water control valves - normally closed
      c. Other applications - as scheduled or as required by Sequence of Operation.
   2. Zone valves shall be sized to meet the control application and they shall maintain their last position in the event of a power failure.

D. Water Valves:
   1. Body and trim materials shall be as specified in “Pipe, Valve & Fittings” specification. Equal percentage ports for modulating service.
   2. Sizing Criteria:
      a. Three-way Modulating Service: Pressure drop equal to twice the pressure drop through the coil exchanger (load), [5] psi maximum.
      b. Contractor shall verify sizing criteria with manufacturer.

E. Steam Valves:
   1. Body and trim materials shall be as specified in “Pipe, Valve & Fittings” specification. Linear ports for modulating service.
   2. Sizing Criteria:
      a. Two-position service: pressure drop 10% to 20% of inlet pressure (psig).
      b. Modulating service 15 psig or less: pressure drop 80% of inlet pressure (psig).
      c. Modulating service 16 psig to 50 psig: pressure drop as scheduled on plans.
      d. In all cases above the contractor shall verify sizing criteria with the valve manufacturer.

2.05 TEMPERATURE SENSORS

A. Temperature sensors shall be Resistance Temperature Device (RTD) or Thermistor.

B. Duct sensors shall be rigid or averaging as required. Averaging sensors shall be a minimum of 5 feet in length.

C. Immersion sensors shall be provided with a separable stainless steel well. Pressure rating of well is to be consistent with the system pressure in which it is to be installed.

D. Space sensors shall be equipped with set-point adjustment, override switch, display, and communication port.

E. Provide matched temperature sensors for differential temperature measurement. Differential accuracy shall be within 0.2 degrees F.

F. The space temperature, setpoint, and override confirmation shall be annunciated by a digital display for each zone sensor. The setpoint shall be selectable utilizing buttons.

2.06 HUMIDITY SENSORS

A. Room Humidity sensors shall have an accuracy of ±1% 25°C from 10% to 80% RH with One-point adjustment calibration. The operating temperature range shall be -10° to 150°F max.

B. Duct sensors shall have a sensing range of 20% to 80% with accuracy of ±1% R.H. Duct sensors shall be provided with a sampling chamber.

C. Outdoor air humidity sensors shall have a sensing range of 20% to 95% R.H. and shall be suitable for ambient conditions of -40 degrees F to 170 degrees F.

D. Humidity sensor's drift shall not exceed 1% of full scale per year.

2.07 STATIC PRESSURE SENSORS

A. Sensor shall have linear output signal. Zero and span shall be field-adjustable.

B. Sensor sensing elements shall withstand continuous operating conditions plus or minus 50% greater than calibrated span without damage.

C. Water pressure sensor shall have stainless steel diaphragm construction, proof pressure of 150 psi minimum. Sensor shall be complete with 4-20 ma output, required mounting brackets, and block and bleed valves. Mount in location accessible for service.

D. Water differential pressure sensor shall have stainless steel diaphragm construction, proof pressure of 150 psi minimum. Over-range limit (DP) and maximum static pressure shall be 3,000 psi. Transmitter shall be complete with 4-20 ma output, required mounting brackets, and five-valve manifold. Mount in a location accessible for service.

2.08 LOW LIMIT THERMOSTATS

A. Safety low limit thermostats shall be vapor pressure type with an element 20 ft minimum length. Element shall respond to the lowest temperature sensed by any one foot section.

2.09 FLOW SWITCHES

A. Flow-proving switches shall be either paddle or differential pressure type, as shown on the Drawings or as specified.

B. Paddle type switches (water service only) shall be UL listed, SPDT snap-acting with pilot duty rating (125 VA minimum). Adjustable sensitivity with NEMA 1 Type enclosure unless otherwise specified:

C. Differential pressure type switches (air or water service) shall be UL listed, SPDT snap-acting, pilot duty rated (125 VA minimum), NEMA 1 Type enclosure, with scale range and differential suitable for intended application, or as specified.

D. Current sensing relays may be used for flow sensing or terminal devices.

2.10 RELAYS

A. Control relays shall be UL listed plug-in type with dust cover. Contact rating, configuration, and coil voltage suitable for application.

B. Time delay relays shall be UL listed solid-state plug-in type with adjustable time delay. Delay shall be adjustable plus or minus 200% (minimum) from set-point shown on plans. Contact rating, configuration, and coil voltage suitable for application. Provide NEMA 1 Type enclosure when not installed in local control panel.

2.11 TRANSFORMERS AND POWER SUPPLIES

A. Control transformers shall be UL listed, Class 2 current-limiting type, or shall be furnished with over-current protection in both primary and secondary circuits for Class 2 service.

B. Unit output shall match the required output current and voltage requirements. Current output shall allow for a 50% safety factor. Output ripple shall be 3.0 mV maximum Peak-to-Peak.

Regulation shall be 0.10% line and load combined, with 50 microsecond response time for 50% load changes. Unit shall have built-in over-voltage protection.

C. Unit shall operate between 0 degrees C and 50 degrees C.

D. Unit shall be UL recognized.

2.12 CURRENT SWITCHES

A. Current-operated switches shall be self-powered, solid state with adjustable trip current. The switches shall be selected to match the current of the application and output requirements of the control system.

2.13 LOCAL CONTROL PANELS

A. All indoor control cabinets shall be fully enclosed NEMA 1 or NEMA 4 rating as required. Provide cabinet with hinged door, key-lock latch, and removable sub-panels. A single key shall be common to all field panels and sub-panels.

B. Interconnections between internal and face-mounted devices pre-wired with color-coded stranded conductors neatly installed in plastic troughs and/or tie-wrapped. Terminals for field connections shall be UL listed for 600-volt service, individually identified per control/interlock drawings, with adequate clearance for field wiring. Control terminations for field connection shall be individually identified per control drawings.

C. Provide on/off power switch with over-current protection and main air gauge for control power sources to each local panel.

2.14 AIR FLOW MEASURING STATIONS

A. Air flow measuring stations shall be multi-point, multi-axis flow ring or cross sensor. Single point or flow bar sensors are not acceptable. The airflow measurement station shall measure from 15 percent to 100 percent of unit nominal airflow. The air flow measuring station shall adjust for temperature variations and shall provide a 2 to 10 Vdc signal that corresponds to actual airflow for controlling and documenting airflow. The accuracy of the airflow measurement station shall be +- 5 percent.

B. Air flow measuring stations shall be provided by the air handler manufacturer or the VAV box manufacturer. See air handler or VAV box specification section for more details.

2.15 WALL MOUNTED CARBON DIOXIDE SENSORS

A. Carbon dioxide sensors shall be of the wall mounted type.

B. Sensors shall be of the auto-calibrated type designed to operate from 24VAC or 24VDC power.

C. Range: 0-2000 ppm CO2

D. Accuracy: ±30 ppm CO2 + 3% of reading

E. Annual Zero Drift: ±10 ppm

F. Response Time: < 3 minutes

G. Output Signals:
1. 0-10 VDC

2. 4-10 mA or 2-10 VDC

H. Resolution of Analog Outputs: 2 ppm CO2

I. Housing Material: Polycarbonate/ABS blend

J. The space temperature, setpoint, and override confirmation shall be annunciated by a digital display for each zone sensor. The setpoint shall be selectable utilizing buttons.

PART 3 - EXECUTION

3.01 GENERAL WORKMANSHIP

A. Install equipment, piping, wiring/conduit parallel to building lines (i.e. horizontal, vertical, and parallel to walls) wherever possible.

B. Provide sufficient slack and flexible connections to allow for vibration of piping and equipment.

C. Install all equipment in readily accessible location as defined by Chapter 1 Article 100 part A of the NEC. Control panels shall be attached to structural walls unless mounted in equipment enclosure specifically designed for that purpose. Panels shall be mounted to allow for unobstructed access for service.

D. Verify integrity of all wiring to ensure continuity and freedom from shorts and grounds.

E. All equipment, installation, and wiring shall comply with acceptable industry specifications and standards for performance, reliability, and compatibility and be executed in strict adherence to local codes and standard practices.

3.02 WIRING

A. All control and interlock wiring shall comply with the national and local electrical codes and Division 26 of these Specifications. Where the requirements of this Section differ with those in Division 26, the requirements of this Section shall take precedence.

B. Do not install Class 2 wiring in conduit containing Class 1 wiring. Do not use boxes and panels containing high voltage for low voltage wiring except for the purpose of interfacing the two (e.g. relays and transformers).

C. Control wiring located in a plenum space that is not installed in a conduit shall be plenum rated.

D. All wire-to-device connections shall be made at a terminal block or terminal strip. All wire-to wire connections shall be at a terminal blocks, or with a crimped connector. All wiring within enclosures shall be neatly bundled and anchored to permit access and prevent restriction to devices and terminals.

E. Maximum allowable voltage for control wiring shall be 120V. Provide and install step down transformers.

F. All wiring shall be installed as continuous lengths, where possible. Any required splices shall be made only within an approved junction box or other approved protective device.

G. Maintain fire rating at all penetrations in accordance with other Sections of this Specification and local codes.

H. Size of conduit and size and type of wire shall be the design responsibility of the Contractor, in keeping with the manufacturer's recommendations and the NEC.

I. Locate control and status relays in designated enclosures only. These relays may also be located within packaged equipment control panel enclosures. These relays shall not be located within Class 1 starter enclosures.

J. Follow manufacturer's installation recommendations for all communication and network cabling. Network or communication cabling shall be run separately from other wiring.

K. Adhere to Division 26 requirements for installation of raceway.

L. Maintain an updated (as-built) wiring diagram with terminations identified at the job site.

M. Flexible metal conduits and liquid-tight, flexible metal conduits shall not exceed 3feet in length and shall be supported at each end. Flexible metal conduit less than 1/2" electrical trade size shall not be used. In areas exposed to moisture liquid tight, flexible metal conduits shall be used.

3.03 INSTALLATION OF SENSORS

A. Install sensors in accordance with the manufacturer's recommendations.

B. Mount sensors rigidly and adequate for the environment within which the sensor operates.

C. Room temperature sensors shall be installed on concealed junction boxes properly supported by the wall framing.

D. All wires attached to sensors shall be air sealed in their conduits or in the wall to stop air transmitted from other areas affecting sensor readings.

E. Install duct static pressure tap with tube end facing directly down-stream of air flow.

F. Sensors used in mixing plenums, and hot and cold decks shall be of the averaging type. Averaging sensors shall be installed in a serpentine manner horizontally across duct. Each bend shall be supported with a capillary clip.

G. All pipe mounted temperature sensors shall be installed in wells. Install all liquid temperature sensors with heat conducting fluid in thermal wells.

H. Wiring for space sensors shall be concealed in building walls. EMT conduit is acceptable within mechanical and service rooms.

I. Install outdoor air temperature sensors on north wall complete with sun shield at designated location.

3.04 FLOW SWITCH INSTALLATION

A. Install using a thread-o-let in steel pipe. In copper pipe use C x C x F Tee, no pipe extensions or substitutions allowed.

B. Mount a minimum of 5 pipe diameters upstream and 5 pipe diameters downstream or 2 feet which ever is greater, from fittings and other obstructions.

C. Install in accordance with manufacturers' instructions.

D. Assure correct flow direction and alignment.

E. Mount in horizontal piping - flow switch on top of the pipe.

3.05 ACTUATOR INSTALLATION

A. Mount and link control damper actuators per manufacturer's instructions.

B. To compress seals when spring return actuators are used on normally closed dampers, power actuator to approximately 5 degrees open position, manually close the damper, and then tighten the linkage.

C. Check operation of damper/actuator combination to confirm that actuator modulates damper smoothly throughout stroke to both open and closed positions.

D. Valves - Actuators shall be mounted on valves with adapters approved by the actuator manufacturer. Actuators and adapters shall be mounted following manufacturer's recommendations.

3.06 WARNING LABELS

A. Affix plastic labels on each starter and equipment automatically controlled. Label shall indicate the following:

C A U T I O N

This equipment is operating under automatic control and may start at any time without warning.

3.07 IDENTIFICATION OF HARDWARE AND WIRING

A. All wiring and cabling, including that within factory-fabricated panels, shall be labeled at each end within 2 inches of termination with a cable identifier and other descriptive information.

B. Permanently label or code each point of field terminal strips to show the instrument or item served.

C. Identify control panels with minimum 1-cm letters on laminated plastic nameplates.

D. Identify all other control components with permanent labels. Identifiers shall match record documents. All plug-in components shall be labeled such that removal of the component does not remove the label.

3.08 CLEANING

A. The Contractor shall clean up all debris resulting from his or her activities daily. The contractor shall remove all cartons, containers, crates, etc. under his control as soon as their contents have been removed. Waste shall be collected and placed in a location designated by the Construction Manager or General Contractor.

B. At the completion of work in any area, the Contractor shall clean all of his/her work, equipment, etc., making it free from dust, dirt and debris, etc.

C. At the completion of work, all equipment furnished under this Section shall be checked for paint damage, and any factory finished paint that has been damaged shall be repaired to match the

adjacent areas. Any metal cabinet or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

3.09 PROTECTION

A. The Contractor shall protect all work and material from damage by his/her work or workers, and shall be liable for all damage thus caused.

B. The Contractor shall be responsible for his/her work and equipment until finally inspected, tested, and accepted. The Contractor shall protect his/her work against theft or damage, and shall carefully store material and equipment received on site that is not immediately installed. The Contractor shall close all open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

3.10 FIELD QUALITY CONTROL

A. All work, materials and equipment shall comply with the rules and regulations of applicable local, state, and federal codes and ordinances as identified in Part 1 of this Section.

B. Contractor shall continually monitor the field installation for code compliance and quality of workmanship. All visible piping and or wiring runs shall be installed parallel to building lines and properly supported.

C. Contractor shall arrange for field inspections by local and/or state authorities having jurisdiction over the work.

3.11 ACCEPTANCE

A. The control systems will not be accepted as meeting the requirements of completion until all tests described in this Specification have been performed to the satisfaction of both the Engineer and Owner.

B. The full range of operation for all Sequences of Operation shall be demonstrated. Where sequences are dependent on season or outside conditions these conditions may be simulated for the purpose of demonstration if approved by both the Architect/Engineer and the Owner. If simulations cannot be acceptably created the Contractor shall perform the demonstration during the proper period.

C. Any tests that cannot be performed due to circumstances beyond the control of the Contractor may be exempt from the Completion requirements if stated as such in writing by the Owner's representative. Such tests shall then be performed as part of the warranty.

END OF SECTION 230991

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Remove and dispose of surface debris as required.

B. Remove and dispose of paving, sidewalk, curbs, etc.

C. Clear site or designated areas of the site of plant life and grass as required, and dispose of as required.

D. Remove and dispose of trees and shrubs as required.

E. Remove and dispose of stumps and root system of trees and shrubs as required.

F. Removal and storage of topsoil.

1.02 RELATED SECTIONS

A. Section 312213 - Rough Grading.

B. Section 329119.13 - Topsoil Placement and Grading: Placement of stored topsoil.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable local code(s) for disposal of debris.

B. Burning of materials on site is prohibited.

C. Coordinate clearing work with utility companies.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

A. Verify existing conditions.

B. Identify existing plant life designated to be removed. Verify with Owner and Engineer prior to removal.

C. Verify limits of clearing.

3.02 PROTECTION

A. Locate, identify and protect utilities that are to remain from damage.

B. Protect trees, plant growth and features designated to remain as final landscaping.

C. Protect benchmarks and existing structures from damage or displacement. Any damage to existing structures is to be promptly repaired at no additional cost to the Owner.

3.03 APPLICATION

A. Clear areas required for access to site and execution of work.

B. Remove paving, curbs, debris and sidewalks as required.

C. Remove trees and shrubs designated to be removed. Remove stumps, main root ball, surface rock and perishable debris.

D. Clear undergrowth and dead wood without disturbing subsoil.

E. Remove paving, debris, rock and extracted plant life from site and dispose of in accordance with State and local ordinances.

F. Excavate topsoil from areas to be further excavated, re-landscaped or regraded. Do not excavate wet topsoil.

G. Stockpile topsoil in area designated on site to a height not exceeding 8 feet. Protect from erosion. Remove excess topsoil not being reused from site. Do not remove any topsoil from the site prior to obtaining the approval of the Engineer.

END OF SECTION 311110

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Removal and storage of subsoil.

B. Cutting, grading, filling and rough contouring the site prior to placement of topsoil or pavement base for final grading.

1.02 RELATED SECTIONS

A. Section 311100 - Site Clearing.

B. Section 312316 - Excavation - Removal of Unsuitable Soils.

C. Section 312323.13 - Backfill - Replacement of Unsuitable Soils.

1.03 REFERENCES

A. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Sieve Analysis: Submit a sieve analysis of all types of fill material to be used.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Subsoil: Reused excavated material, graded, free of lumps, rocks and gravel larger than 3 inches in size, debris and contaminants.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify site conditions.

B. Verify that survey benchmark and intended elevations for the work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours and datum.

B. Identify known underground, aboveground and aerial utilities. Stake and flag locations.

C. Coordinate the removal or relocation of utilities with the necessary utility companies.

D. Protect above and below-grade utilities that are to remain.

E. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.

F. Protect benchmarks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic.

3.03 APPLICATION

A. Excavate subsoil from areas to be further excavated or regraded. Do not excavate wet subsoil.

B. Stockpile in area designated on site. Remove excess subsoil not being reused from site.

C. Stockpile subsoil to a height not exceeding 8 feet. Cover to protect from erosion.

D. When excavation through roots is necessary, perform work by hand and cut roots with sharp axe.

E. Fill areas to contours and elevations with unfrozen subsoil material with allowances made for topsoil, aggregate base course or paving.

F. Place and compact subsoil fill material in 12 inch lifts (compacted thickness). Compact to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.

G. Maintain optimum moisture content of fill materials to attain required compaction density.

H. Make grade changes gradual. Blend slope into level areas.

I. Remove surplus fill materials from site.

3.04 TOLERANCES

A. Maximum Variation From Top Surface of Subgrade: 1 inch.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Perform tests and analysis of fill material in accordance with ANSI/ASTM D1557.

C. Perform compaction tests at a rate of one for every 10 cubic yards of material placed.

END OF SECTION 312213

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Excavation for building foundations.

B. Excavation for slabs-on-grade, paving and landscaping.

C. Excavation for site structures.

D. Site excavation.

1.02 RELATED SECTIONS

A. Section 312213 - Rough Grading.

B. Section 312323.13 - Backill: Backfilling excavated material.

1.03 QUALITY ASSURANCE

A. Do not excavate wet or frozen materials without written approval from the Engineer.

B. Provide safety barricades around open excavations.

1.04 FIELD MEASUREMENTS

A. Verify that survey benchmark and intended elevations for the work are as indicated.

1.05 COORDINATION

A. Coordinate work under provisions of Section 013100.

PART 2 - PRODUCTS

2.01 NOT USED.

PART 3 - EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours and datum.

B. Identify known underground, above ground and aerial utilities. Stake and flag locations.

C. Notify utility company to remove or relocate utilities, if required.

D. Protect above and below grade utilities which are to remain.

E. Protect plant life, lawns and other features remaining as a portion of final landscaping.

F. Protect bench marks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic.

G. Notify the Engineer prior to commencement of excavation.

3.02 EXCAVATION

A. Underpin adjacent structures that may be damaged by excavation work, including utilities and pipe chases.

B. Excavate subsoil required to accommodate landscaping and construction operations to the limits as indicated on the plans.

C. Machine slope banks to angle of repose or less, until shored.

D. Grade top perimeter of excavation to prevent surface water from draining into excavation.

E. Hand trim excavation. Remove loose matter.

F. Remove lumped subsoil, boulders, and rock.

G. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

H. Correct unauthorized excavation at no extra cost to Owner in accordance with Section 312323.

I. Stockpile excavated material in area designated on site and remove excess material not being reused from site.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Provide for visual inspection of bearing surfaces.

3.04 PROTECTION

A. Protect work under provisions of Section 015000.

B. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

C. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION 312316

PART -1 GENERAL

1.01 SECTION INCLUDES

A. Site structure backfilling to sub-grade elevations.

B. Site filling and backfilling.

C. Consolidation and compaction.

D. Fill for over-excavation.

1.02 RELATED SECTIONS

A. Section 312316 - Excavation.

B. Section 312213 - Rough Grading.

1.03 REFERENCES

A. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18-inch Drop.

B. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Material Source: Submit name of imported material suppliers.

C. Provide a letter certifying that each type of imported fill material has been provided by a NYSDEC certified clean fill source or has been tested in accordance with NYSDEC Unrestricted Soil Use Guidelines as defined in Subpart 375-6 Remedial Program Soil Cleanup Objectives.

D. Test Reports: Submit sieve analysis and test results from NYSDEC Unrestricted Soil Use Guidelines for each type of imported fill to be used.

1.05 PROJECT CLOSEOUT SUBMITTALS

A. Submit under provisions of Section 017200.

B. Provide documentation on the contractor’s letterhead certifying that all fill material utilized for this project came from approved sources and met the requirements of the NYSDEC Unrestricted Program Soil Use Guidelines.

PART 2 - PRODUCTS

2.01 IMPORTED FILL SOURCE

A. All imported fill materials shall be provided by a NYSDEC certified clean fill source or meet the requirements of NYSDEC Unrestricted Soil Use Guidelines as defined in Subpart 375-6: Remedial Program Soil Cleanup Objectives.

B. Provide materials from the same source throughout the work. Change of source requires approval from the Engineer.

2.02 FILL MATERIALS

A. Coarse Aggregate: Angular crushed or natural stone; washed, free of shale, clay, friable material, sand and debris; graded in accordance with ASTM D2487 Group Symbol GW or GP within the following limits

1. Sieve Size	Percent Passing
a. 1 1/2 inch	100
b. 1 inch	90 - 100
c. 1/2 inch	0 - 15
d. No. 200	0 - 1

B. Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ASTM D2487 Group Symbol SW or SP, within the following limits:

1. Sieve Size	Percent Passing
a. No. 4	100
b. No. 14	0 - 100
c. No. 50	5 - 90
d. No. 100	4 - 30
e. No. 200	0

C. Subsoil: Reused, excavated material, graded, free of lumps, rocks and gravel larger than 3 inches in size, debris and contaminants; no more than 15% passing the No. 200 sieve; no more than 30% retained on the ¾" sieve.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify fill materials to be reused are acceptable.

C. Verify items to be buried during backfilling process have been inspected prior to backfilling.

3.02 PREPARATION

A. Compact subgrade to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.

B. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with sand or subsoil and compact to density equal to or greater than requirements for subsequent backfill material.

3.03 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy materials.

C. Place and compact fill material in 12 inch lifts (compacted thickness). Compact to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.

D. Employ a placement method that does not disturb or damage structures or other items against which material is backfilled.

E. Backfill against supported structures. Do not backfill against unsupported structures.

F. Backfill simultaneously on each side of structure.

G. Make grade changes gradual. Blend slope into level areas.

H. Remove surplus backfill materials from site.

I. Leave fill material stockpile areas completely free of excess fill materials.

3.04 TOLERANCES

A. Maximum Variation From Top Surface of Backfilling Under Paved Areas: 1/4 inch.

B. Maximum Variation From Top Surface of General Backfilling: 1 inch.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Perform field tests and analysis of fill material in accordance with ANSI/ASTM D1557.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

D. Unless additional testing is required by the Engineer, compaction tests shall be taken at the following rates:
   1. Pavement Subgrade: One test per 5,000 square feet of subgrade immediately prior to placing subbase.

END OF SECTION 312323.13

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Excavate trenches for piping and utilities.

B. Compacted bedding and backfill around and over piping and utilities to subgrade elevations.

C. Backfilling and compaction.

1.02 RELATED SECTIONS

A. Section 312213 - Rough Grading: Topsoil removal from site surface.

1.03 REFERENCES

A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18-inch Drop.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Test Reports: Submit a sieve analysis for backfill to be used.

1.05 QUALITY ASSURANCE

A. Do not excavate wet or frozen materials without written approval from the Engineer.

B. Do not backfill over or with wet or frozen materials.

C. Provide safety barricades around open excavations.

1.06 FIELD MEASUREMENTS

A. Verify that survey benchmark and intended elevations for the work are as shown on plans.

1.07 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate trenching with installation of pipe or conduit.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Subsoil: Reused, excavated material, graded, free of lumps, rocks and gravel larger than 3 inches in size, debris and contaminants.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions and substrate.

B. Verify fill materials to be reused are acceptable.

C. Verify items to be buried during backfilling process have been inspected prior to backfilling.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Maintain and protect existing utilities remaining which pass through work area.

C. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.

D. Protect benchmarks, existing structures, fences, sidewalks, paving and curbs from excavation equipment and vehicular traffic. Any item damaged by the contractor shall be promptly repaired at the contractor's expense.

E. Protect above and below grade utilities which are to remain.

F. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with subsoil fill and compact to density equal to or greater than requirements for subsequent backfill material.

3.03 EXCAVATION

A. Excavate subsoil required for piping.

B. Cut trenches to the dimensions shown on the plans.

C. Excavation shall not interfere with normal 45 degree bearing splay of foundations.

D. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.

E. Remove lumped subsoil, boulders, and rock.

F. For trenches made in solid rock, excavate to a depth of 1 foot below the proposed pipe invert.

G. Correct unauthorized excavation at no cost to Owner in accordance with Section 312323.13.

H. Stockpile excavated material in area designated on site and remove excess material not being used from site. Remove excavated material from site.

3.04 BACKFILLING

A. Support pipe and conduit during placement and compaction of fill material.

B. For trenches made in solid rock, place an additional 1 foot of fill material under pipe or conduit.

C. Place fill material to the dimensions and limits as shown on the plans.

D. Place and compact fill material in 12 inch lifts (compacted thickness) for depths greater than 2 feet and 6 inch lifts (compacted thickness) for depths less than 2 feet. Compact to 92 percent maximum dry density in accordance with ANSI/ASTM D1557.

E. Place fill material simultaneously on both sides of the pipe or conduit. Backfill to the dimensions and limits shown on the plans with reused subsoil.

F. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

G. Place and compact material in continuous layers not exceeding 6 inches compacted depth.

H. Employ a placement method that does not disturb or damage conduit or pipe.

3.05 TOLERANCES

A. Maximum Variation From Top Surface of Backfilling Under Paved Areas: 1/4 inch.

B. Maximum Variation From Top Surface of General Backfilling: 1 inch.

3.06 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Perform field tests and analysis of fill material in accordance with ANSI/ASTM D1557.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

D. Unless additional testing is required by the Engineer, compaction tests shall be taken at the springline of the pipe and after each lift at 100 foot intervals along the pipe run.

3.07 CLEANING

A. Remove surplus backfill materials from site.

B. Leave fill material stockpile areas completely free of excess fill materials.

3.08 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Recompact fills subjected to vehicular traffic.

END OF SECTION 312333

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Decorative Aluminum fence System.
   2. Infill panel system for Fence System.
   3. Anchoring and Fasteners.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.

C. Manufacturer's Instructions: Indicate special procedures and conditions required for proper preparation and installation.

1.04 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For decorative metallic-coated-steel tubular picket fences, including finish, indicating compliance with referenced standard and other specified requirements.

1.05 PERFORMANCE REQUIREMENTS

A. All railings shall be supplied to conform to applicable sections of the following codes:
   1. ICC A117.1-2009.
   2. ADA Standards.
   3. 2020 Buidling Code of New York State.

B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Handrails / Guardrails:
      a. Uniform load of 50 lbf/ft. applied in any direction.
      b. Concentrated load of 200 lbf. applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
      d. Top Rails of Guards:
         1) Uniform load of 50 lbf/ft. applied in any direction.
         2) Concentrated load of 200 lbf. applied in any direction.
         3) Uniform and concentrated loads need not be assumed to act concurrently.
      e. Infill Area of Guards:
         1) Horizontal concentrated load of 50 lbf. applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Load on infill area need not be assumed to act concurrently with loads on top rails.

C. Thermal Movements: Provide exterior railings 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°F, ambient; 180°F, material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For gate operators to include in maintenance manuals.

B. Manufacturer's Warranties.

1.07 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.

B. Mock-up Panel: one section of Fence system for verification.
1. Approximate Size: ¼ to ½ of full size, using full size components.
2. Approved mockups may become part of the completed work if undamaged at time of Substantial Completion.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents unless such deviations are specifically approved by Architect in writing.

C. Installer Qualifications: Fabricator of products.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Railing Product: Subject to compliance with requirements, provide ornamental perforated aluminum panel railing as manufactured and assembled by BOK Modern, Inc.; BLADE Fence System; www.bokmodern.com or an approved equivalent. Single source manufacturer is required.

2.02 DECORATIVE ALUMINUM FENCE SYSTEM

A. Decorative Aluminum Fences: Fences made from aluminum extrusions.
1. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
a. BOK Modern, Inc.: BLADE Fence System (48 inch high)
b. Architect approved equivalent.

2.03 ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

B. Extruded Bars and Tubing: ASTM B221, Alloy 6063-T5/T52, 6005-T5
1. Provide 1 ½ in IPS, (1.90 in OD) Standard Weight (Schedule 40) pipe for rails, Schedule 80 for posts, Schedule 10 for pickets, unless otherwise indicated

C. Extruded Structural Post Tubing: ASTM B429/B429M, Alloy 6061-T6.
1. Rectangular manufacturer's standard post configurations as indicated on the drawings.

D. Plate and Sheet: ASTM B209, Alloy 6061-T6

E. Perforated Aluminum Sheet: AA5052-H32, 0.1875-inch (4.76 mm) thick.
   1. Panel Pattern: A-26 or As selected by the Architect from the manufacturer's full pattern library.

F. Panel Clips and Structural Fasteners: Alloy 6063-T6. Manufacture's standard bolts, screws and washers factory-finished to match panels.

2.04 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Unless indicated otherwise, provide aluminum with the following finish:
   1. Powder Coat Finish: Kynar 70% PVDF Fluoropolymer, AAMA 2605, in color selected by the Architect.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 FABRICATION

A. Completed panels shall be capable of supporting a 200 lb. load (applied at midspan) without permanent deformation.

3.03 DECORATIVE FENCE INSTALLATION

A. Install fences according to manufacturer's written instructions.

B. Install fences by setting posts as indicated and fastening rails and infill panels to posts.

C. Post Setting: Set posts on concrete curbs at the indicated spacing.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during fastening into concrete curbs. Set on butyl leveling sealant. Remove excess sealant beyond plate footprint.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aggregate base course.

B. Paving aggregates.

1.02 REFERENCE STANDARDS

A. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.

B. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

C. NYSDOT Standard Specifications Section 703-02.

D. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).

1.03 DELIVERY, STORAGE, AND HANDLING

A. Aggregate Storage, General:
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aggregate Base Course: Angular, crushed, recycled concrete; free of shale, clay, friable materials and debris; graded in accordance with ANSI/ASTM C136 within the following limits:

#	Sieve Size	% Passing
1	2"	90-100
2	1/4"	30-65
3	No. 40	5-40
4	No. 200	0-10

B. Material retained on the 1/2 inch (13 mm) sieve is coarse aggregate.

C. Coarse aggregate shall not have more than 10 percent by weight of flat or elongated pieces. A flat or elongated piece is defined as being three times greater in the largest dimension as compared to its least dimension.

D. The portion of the aggregate base course which passes the No. 40 (0.30 mm) screen shall have a plasticity index of one as tested in accordance with ASTM D4318.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

A. Place aggregate in maximum 3 inch (75 mm) layers and roller compact to 95% maximum dry density in accordance with ANSI/ASTM D1557.

B. Level and contour surfaces to elevations and gradients indicated.

C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

E. New pavement must be placed on properly compacted aggregate base course within 24 hours of final compaction. If aggregate base course is left open for more than 24 hours, re-compact and retest in accordance with ANSI/ASTM D1557.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch (6.4 mm) measured with 10 foot (3 m) straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch (6.4 mm).

C. Variation From Design Elevation: Within 1/2 inch (12.8 mm).

3.05 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION 321123

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Asphaltic concrete paving; wearing, binder or base course.

1.02 RELATED SECTIONS

A. Section 321123.16 - Recycled Concrete Aggregate Base Course.

1.03 REFERENCES

A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

B. AI MS-8 - Asphalt Paving Manual.

C. ASTM D242 - Mineral Filler for Bituminous Paving Mixtures.

D. ASTM D546 - Test Method for Sieve Analysis of Mineral Filler for Road and Paving Materials.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Supplier: Submit name of asphalt supplier to be used on the project prior to placement of any asphalt on the project.

C. Design Data: Submit asphalt mix design for each asphalt type to be used.

D. Testing Firm: Submit name of testing firm to be performing tests on asphalt pavement.

1.05 QUALITY ASSURANCE

A. Obtain materials from the same supplier throughout the duration of the project.

B. Do not alter from mix design requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Deliver asphalt in sealed, metal containers covered with suitable material to protect the asphalt from the elements.

C. Lightly lubricate the inside surface of the container with a thin oil or soap solution before loading asphalt.

D. All containers must be cleaned of all foreign materials prior to loading.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when base surface temperature is less than 40 degrees F, or if surface is wet or frozen.

B. Do not place asphalt when precipitation is occurring.

PART 2 - PRODUCTS

2.01 2.01 - MATERIALS

A. Asphalt Cement: AC-20; homogeneous, and shall not foam when heated to 347 degrees F.

B. Fine Aggregate: Material passing the 1/8 inch sieve; natural sand of hard, strong, durable particles which are free from coatings or injurious amounts of clay, loam or other deleterious substances.

C. Coarse Aggregate: Material retained on the 1/8 inch sieve; crushed stone or gravel; clean, durable, sharp angled fragments of rock of uniform quality.

D. Mineral Filler: ASTM D242, finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter; 100 percent shall pass the No. 30 sieve; a minimum of 85 percent shall pass the No. 80 sieve; and a minimum of 65 percent shall pass the No. 200 sieve as measured in accordance with ASTM D546.

2.02 2.02 - EQUIPMENT

A. Rollers: Minimum weight of 10 tons; equipped with lubricating devices for the roller wheels.

B. Pavers: Equipped with a vibratory device.

2.03 2.03 - ACCESSORIES

A. Tack Coat: Homogeneous, medium curing, liquid asphalt.

B. Wheel Lubricant: Oil-water mixture containing maximum 10 percent lubricating oil.

2.04 2.04 - MIXES

A. Use dry material to avoid foaming. Mix uniformly.

B. Base Course: NYSDOT Type 1; 4.0 to 6.0 percent of asphalt cement by weight in mixture in accordance with the following gradation:

SIEVE SIZE	PERCENT PASSING
2 INCHES	100
1 ½ INCHES	90-100
1 INCH	78-95
½ INCH	57-84
¼ INCH	40-72
1/8 INCH	26-57
NO. 20	12-36
NO. 40	8-25
NO. 80	4-16
NO. 200	2-8

A. Binder Course: NYSDOT Type 3; 4.5 to 6.5 percent of asphalt cement by weight in mixture in accordance with the following gradation:

Sieve Size	Percent Passing

1-1/2 inches	100
1 inch	95-100
1/2 inch	70-90
1/4 inch	48-74
1/8 inch	32-62
No. 20	15-39
No. 40	8-27
No. 80	4-16
No. 200	2-8

B. Wearing Course: NYSDOT Type 6; 5.8 to 7.0 percent of asphalt cement by weight in mixture in accordance with the following gradation:

Sieve Size	Percent Passing
1 inch	100
1/2 inch	95-100
1/4 inch	65-85
1/8 inch	36-65
No. 20	15-39
No. 40	8-27
No. 80	4-16
No. 200	3-6

2.05 SOURCE QUALITY CONTROL

A. Obtain asphalt materials from same source throughout the project.

B. Provide asphalt in accordance with the approved mix design for each type of asphalt.

C. Test samples in accordance with AI MS-2.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify that compacted subbase is dry and ready to receive work of this section.

C. Verify gradients and elevations of base are correct.

D. Verify that all castings are properly installed and are at the correct elevations.

E. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Apply tack coat at uniform rate of 0.03 to 0.07 gal/sq. yd. to contact surfaces of castings, curbs, gutters and any asphalt or concrete material.

B. Do not apply tack coat to wet or frozen surfaces.

C. Coat top surfaces of castings with oil to prevent bond with asphalt pavement.

3.03 INSTALLATION

A. Install work in accordance with AI MS-8.

B. Maintain asphalt temperature between 250 and 325 degrees F during placement.

C. Place asphalt within 24 hours of applying tack coat.

D. Place asphalt to compacted thicknesses as identified on plans. If a multiple course pavement is to be used, place top course within 24 hours of placing bottom course. If more than 24 hours elapse, a tack coat will be required to be placed over the entire surface of the bottom course prior to any additional paving.

E. Utilize the vibratory device on the paver at all times.

F. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

G. Compact pavement to a minimum of 94% maximum density.

H. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

I. Seal all joints between new pavement and existing pavement with asphalt cement.

3.04 TOLERANCES

A. Maximum Variation From Flatness: 1/8 inch measured with 10 foot straight edge.

B. Maximum Variation From Scheduled Compacted Thickness: 1/8 inch.

C. Maximum Variation from True Elevation: 1/4 inch.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Take samples and perform tests in accordance with AI MS-2.

C. Test are to include percent compaction, gradation and asphalt content.

D. Provide an asphalt thermometer for determining the asphalt temperature during paving operations.

E. Frequency of Tests: One test for every 1,000 square feet of each pavement course.

3.06 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Immediately after placement, protect pavement from mechanical injury until project is accepted by the Owner.

END OF SECTION 321216

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks, handicap ramps, driveway aprons.

B. Formwork.

1.02 RELATED SECTIONS

A. Section 312213 - Rough Grading: Preparation of subgrade for sidewalk placement.

B. Section 321123 - Aggregate Base Course

1.03 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

C. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

D. ASTM C33 - Concrete Aggregates.

E. ASTM C94 - Ready Mix Concrete.

F. ASTM C150 - Portland Cement

G. ASTM C260 - Air-Entraining Admixtures for Concrete.

H. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

I. ASTM C494 - Chemical Admixtures for Concrete.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide data on joint filler, admixtures and curing compounds.

C. Supplier: Submit name of concrete supplier prior to the placement of any concrete on the project.

D. Design Data: Provide a design mix for each type of concrete to be used on the project.

E. Certificates: Submit receipts of all concrete deliveries, indicating source, date, contractor, amount of concrete, concrete strength, truck number and time load was batched.

F. Testing Firm: Submit name of testing firm to be performing tests on concrete.

1.05 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 017839.

B. Accurately record locations of each day's concrete pour.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Obtain concrete only from approved suppliers and maintain the same source throughout the project.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Deliver concrete in accordance with ASTM C94, Alternative No. 2.

C. Place all concrete within 90 minutes of time load was batched.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F, or if surface is wet or frozen.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement: ASTM C150, air entraining, Type 1A Portland, gray color.

B. Aggregates: ASTM C33.

C. Water: Potable and not detrimental to concrete.

D. Reinforcement: ANSI/ASTM A185 plain welded steel wire fabric; in flat sheets; epoxy finish.

2.02 ACCESSORIES

A. Forms: Douglas Fir plywood type; solid, sound, undamaged sheets.

B. Joint Filler: ANSI/ASTM D1751; 1/2 inch thick.

C. Air Entraining Admixture: ASTM C260.

D. Chemical Admixture: ASTM C494, type as required.

E. Curing Compound: ASTM C309, Type 1, Class A.

F. Form Release Agent: Colorless material which will not stain concrete or absorb moisture.

G. Detectable Warning Surface: SAFTI-TRAX Mats or equal.

H. Joint Sealant: ASTM C920,,Type M, Grade P; SL-2 by Sonneborn or equal.

2.03 MIXES

A. Concrete shall be mixed and prepared in accordance with the approved mix design and ASTM C94, Alternative No. 2.

B. The mix shall be such that the concrete shall attain the following characteristics:
   1. Compressive Strength (28 days): 4,000 psi.
   2. Slump: 2½ to 3½ inches.
   3. Air Entrainment: 6% ±1%.

C. Use chemical admixtures only when approved by the Engineer. Use of admixtures will not relax placement requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify datum and all elevations are as indicated on the plans.

C. Verify compacted granular subbase has been properly prepared and is ready to receive work of this section.

D. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Compact base to minimum 95 percent maximum dry density in accordance with ANSI/ASTM D1557.

B. Moisten base to a minimum depth of 1/2 inch to minimize absorption of water from fresh concrete.

C. Coat surfaces of manhole and catch basin frames with oil to prevent bond with concrete pavement.

D. Place and secure forms to correct location, dimension and profile.

E. Assemble formwork to permit easy stripping and dismantling without damaging concrete. Coat forms with form release agent.

3.03 INSTALLATION

A. Place joint filler vertical in position in straight lines. Secure to formwork during concrete placement.

B. Place reinforcement as indicated on the plans. Interrupt reinforcement at expansion joints.

C. Place concrete in accordance with ACI 301.

D. Ensure reinforcement and formed joints are not disturbed during concrete placement.

E. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that joints occur.

F. Vibrate concrete adjacent to forms.

G. Place concrete to pattern indicated.

H. Place expansion joints with joint filler at 20 foot intervals.

I. Place scored contraction joints at 4 foot intervals.

J. Place joint filler between paving components and building or other appurtenances and in expansion joints.

K. Apply a light broom finish perpendicular to traffic.

L. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

A. Field inspection and testing shall be performed under provisions of Section 014500.

B. Take six concrete test cylinders for every 50 cu. yds. or fraction thereof of each class of concrete placed each day.

C. Cure test cylinders on site under same conditions as concrete sidewalk.

D. Take one slump test for each set of test cylinders taken.

E. Concrete not meeting slump requirements will be rejected.

F. Concrete represented by cylinders which do not meet required strength will be removed and replaced at no additional cost to the Owner.

3.05 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Immediately after placement, protect sidewalk from premature drying, excessive temperatures and mechanical injury.

C. Protect sidewalk from damage until project is accepted by the Owner.

END OF SECTION 321313.33

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Reinforced concrete curb.

B. Formwork.

1.02 RELATED SECTIONS

A. Section 312000 - Earth Moving.

1.03 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

C. ASTM A615 - Deformed and Plain Billet Steel for Concrete Reinforcement.

D. ASTM C33 - Concrete Aggregates.

E. ASTM C94 - Ready Mix Concrete.

F. ASTM C150 - Portland Cement

G. ASTM C260 - Air-Entraining Admixtures for Concrete.

H. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

I. ASTM C494 - Chemical Admixtures for Concrete.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide data on joint filler, admixtures and curing compounds.

C. Supplier: Submit name of concrete supplier prior to the placement of any concrete on the project.

D. Design Data: Provide a design mix for concrete to be used on the project.

E. Certificates: Submit receipts of all concrete deliveries, indicating source, date, contractor, amount of concrete, concrete strength, truck number and time truck load was batched.

F. Testing Firm: Submit name of testing firm to be performing tests on concrete.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record locations of each day's concrete pours.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Obtain concrete only from approved suppliers and maintain the same source throughout the project.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver concrete in accordance with ASTM C94, Alternative No. 2.

B. Place all concrete within 90 minutes of time load was batched.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees, or if surface is wet or frozen.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement: ASTM C150, Type 1 Portland, gray color.

B. Aggregates: ASTM C33.

C. Water: Potable and not detrimental to concrete.

D. Reinforcement: ANSI A615 steel; 60 ksi yield grade; deformed billet steel bars; uncoated finish.

E. Dowels: ASTM A615 steel; 60 ksi yield grade; plain steel, uncoated finish.

2.02 ACCESSORIES

A. Steel Forms: Minimum 16 gauge thick, stiffened to support weight of concrete with a minimum deflection.

B. Wood Forms: Douglas Fir species; solid, sound, undamaged sheets; minimum 2 inches (50 mm) thick.

C. Joint Filler: ANSI/ASTM D1751; 1/2 inch thick.

D. Air Entraining Admixture: ASTM C260.

E. Chemical Admixture: ASTM C494, type as required.

F. Curing Compound: ASTM C309, Type 1, Class A.

G. Form Release Agent: Colorless material which will not stain concrete or absorb moisture.

H. Joint Sealant: ASTM C920, Type S, Grade NS; NP-1 by Sonneborn or equal.

2.03 MIXES

A. Concrete shall be mixed and prepared in accordance with the approved mix design and ASTM C94, Alternative No. 2.

B. The mix shall be such that the concrete shall attain the following characteristics:

1. Compressive Strength (28 days): 4,000 psi.
2. Slump: 2½ to 3½ inches.
3. Air Entrainment: 6% ±1%.

C. Use chemical admixtures only when approved by the Engineer. Use of admixtures will not relax placement requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify datum and all elevations are as indicated on the plans.

C. Verify compacted granular subbase has been properly prepared and is ready to receive work of this section.

D. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Excavate to the required depth and compact surface.

B. Place and secure forms to correct location, dimension and profile.

C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

D. Moisten base to a minimum depth of 1/2 inch to minimize absorption of water from fresh concrete.

E. Coat forms with form release agent.

3.03 INSTALLATION

A. Place joint filler vertical in position and at equal spaces not exceeding 20 feet. Secure to formwork during concrete placement.

B. Place dowels through joint filler as indicated on the plans. One end of dowel is to be greased or set in a capped sleeve to allow longitudinal movement.

C. Place reinforcement as indicated on the plans. Interrupt at expansion joints.

D. Place concrete in accordance with ACI 301.

E. Ensure reinforcement, dowels, joint filler or forms are not disturbed during concrete placement.

F. Place concrete continuously between construction joints. Do not break or interrupt successive pours such that cold joints occur.

G. Vibrate concrete adjacent to forms.

H. After concrete sets, but prior to curing, remove front forms without damaging concrete and apply a light broom finish to the top and face of the curb.

I. Place curing compound on exposed surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

A. Field inspection and testing shall be performed under provisions of Section 014500.

B. Take six concrete test cylinders for every 50 cu. yds. or fraction thereof of concrete placed each day.

C. Cure test cylinders on site under same conditions as curb.

D. Take one slump test for each set of cylinders taken.

E. Concrete not meeting slump requirements will be rejected.

F. Concrete represented by cylinders which do not meet required strength will be removed and replaced at no additional cost to the Owner.

3.05 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Immediately after placement, protect curb from premature drying, excessive temperatures, rain and mechanical injury.

C. Protect curb from damage until project is accepted by the Owner.

END OF SECTION 321613

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Painted pavement delineation.

B. Painted pavement symbols.

1.02 REFERENCES

A. New York State Department of Transportation Standard Specifications.

1.03 SUBMITTALS

A. Submit under provisions of Section 013300 - SUBMITTALS.

B. Product Data: Provide data on paint.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500 - PRODUCT DELIVERY, STORAGE, AND HANDLING.

B. Deliver all materials to the site in their original containers.

C. Store all materials in a cool, dry place.

D. Do not expose paint to open flames or temperatures which may ignite the paint.

E. Store all materials such that the paint is not contaminated.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Do not apply paint when the ambient temperature is below 40 degrees F.

B. Do not apply paint to wet or frozen surfaces or when precipitation is occurring.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Paint: Flexible, non-skinning paint; homogeneous, conforming to the requirements of Section 640 of the New York State Department of Transportation Standard Specifications; color as indicated on the plans or directed by Engineer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that pavement is ready to receive work of this section.

B. Beginning of application means applicator accepts existing conditions.

3.02 PREPARATION

A. Remove all dirt, grease, oil or other foreign matter from pavement which might affect the bond between the pavement and the paint.

B. Remove all temporary pavement markings without causing damage to the pavement.

3.03 APPLICATION

A. Apply paint with spray type striping machines to achieve a dry film thickness of 14 mils to 16 mils at the locations and to the dimensions as indicated on the plans.

B. Symbols may be rolled or brushed onto the pavement as long as a dry film thickness of 14 mils to 16 mils is achieved.

C. All stripes and symbols shall have clean, sharp edges.

3.04 TOLERANCES

A. Maximum offset from true position: 1 inch.

3.05 CLEANING

A. Clean adjacent areas which received paint during work of this section.

3.06 PROTECTION

A. Protect finished work under provisions of Section 015000 - TEMPORARY FACILITIES AND CONTROLS.

B. Protect painted markings from damage or discoloration until project is accepted by the Owner.

END OF SECTION 321728

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Bollards.

B. Footings and foundations.

1.02 REFERENCES

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

C. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

D. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.

E. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2017a.

1.03 SUBMITTALS FOR REVIEW

A. Section 013300 - SUBMITTALS.

PART 2 - PRODUCTS

2.01 MATERIALS

A. ASTM A36/A36M, structural steel tubing.

2.02 BOLLARDS

A. Formed Steel Tubes: 1/4" thick, 6" diameter galvanized steel, concrete filled.

B. PVC Bollard Cover: Manufactured by ULINE, Model H-3719Y. Color: Yellow.

C. Quantity: As indicated on plans.

D. See Section 033000 - CAST-IN-PLACE CONCRETE for concrete requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install units in accordance with manufacturer's instructions, without damage. Replace or repair damaged units.

B. Install units in alignment with adjacent work.

C. Install bollards in footings. Bollards shall be installed in locations as per Drawing requirements or in locations as directed by Architect/Engineer.

D. Install bollard cover. Drill and tap steel bollard to accept two (2) galvanized screws to attach bollard cover at 4" above final grade.

END OF SECTION 323000

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Finish grade subsoil.

B. Place, level and compact topsoil.

1.02 RELATED SECTIONS

A. A. Section 329219.16 – Hydroseeding.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Deliver topsoil to the site in uncontaminated containers.

C. Do not stockpile topsoil over a height of 8 feet.

D. Cover stockpiled topsoil to protect from precipitation, erosion and contamination.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Do not place wet or frozen topsoil.

B. Do not place topsoil on wet or frozen ground or when precipitation is occurring.

1.05 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate with all adjacent work and work within areas to receive topsoil.

C. Coordinate the storage of topsoil under provisions of Section 311100 with the placement of topsoil in this section.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; friable loam; free of subsoil, clay or impurities, plants, weeds, roots, grass, stone and foreign matter; acidity range (pH) of 5.8 to 6.5; containing a minimum of 2.75 percent and a maximum of 25 percent organic matter. Topsoil may be reused from on-site if it meets these requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing substrate and conditions.

B. Verify site conditions and note irregularities affecting work of this section.

C. Beginning work of this section means acceptance of existing conditions.

3.02 PREPARATION

A. Prepare subsoil in accordance with Section 312000.

B. Eliminate uneven areas and low spots. Remove and dispose of debris, roots, branches and stones in excess of 1/2 inch in size. Remove and dispose of subsoil contaminated with petroleum products.

C. Scarify subsoil to depth of 3 inches where topsoil is scheduled to be placed. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.03 INSTALLATION

A. Place topsoil in areas where seeding, sodding or planting is scheduled or where shown on the plans.

B. Place topsoil to the depths as indicated on the plans.

C. Use topsoil in relatively dry state. Place during dry weather.

D. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles and contours of subgrade.

E. Remove and dispose stone, roots, grass, weeds, debris and foreign material while spreading.

F. Manually spread topsoil around trees, plants and building to prevent damage.

G. Lightly roll placed topsoil.

H. Remove surplus subsoil and topsoil from site. Do not remove surplus topsoil from the site prior to obtaining approval of the Engineer.

I. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.04 TOLERANCES

A. Maximum Variation from Proposed Elevation: 1/2 inch.

3.05 PROTECTION

A. Protect finished work under provisions of Section 016500.

B. Protect landscaping and other features remaining as final work.

C. Protect existing structures, fences, roads, sidewalks, paving and curbs. Any damage caused by the Contractor to any of these items shall be repaired promptly by the Contractor at no additional cost to the Owner.

END OF SECTION 329119.13

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Seeding.

B. Mulch, fertilizer, hydromulch and other accessories.

C. Maintenance.

1.02 RELATED SECTIONS

A. Section 329119.13 – Topsoil Placement and Grading.

1.03 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.04 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel and Brome Grass.

1.05 SUBMITTALS

A. Submit under provisions of Section 013000.

B. Product Data: Provide data on seed mixtures, fertilizer and lime.

C. Certificates: Provide certificates indicating that all fertilizer, pesticides and herbicides comply with all applicable regulatory agency requirements.

1.06 OPERATION AND MAINTENANCE DATA

A. Submit under provisions of Section 017000.

B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.07 QUALITY ASSURANCE

A. Seed: Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.08 REGULATORY REQUIREMENTS

A. Comply with applicable regulatory agencies for fertilizer, pesticide and herbicide composition.

B. All fertilizer, pesticides and herbicides to be used shall comply with all applicable regulatory agency requirements.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 016000.

B. Deliver grass seed mixture in original sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis and name of manufacturer.

D. Deliver Hydromulch in UV and weather resistant bags, showing weight, chemical analysis and name of manufacturer.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not sow immediately following rain, during windy periods or if ground is frozen.

B. Do not sow when the ambient temperature is expected to drop below 40 degrees F or rise above 90 degrees F during the time in which the seed will establish itself.

C. Planting Season: April 1st through May 15th or September 1st through October 15th.

1.11 COORDINATION

A. Coordinate work under provisions of Section 013100.

B. Coordinate with grading and placement of topsoil.

C. Coordinate with installation of underground sprinkler system piping and watering heads.

1.12 WARRANTY

A. Provide a one-year warranty under provisions of Section 017000.

B. Include coverage for one continuous growing season; reseed areas of dead or unhealthy grass at no additional cost to the Owner.

1.13 MAINTENANCE SERVICE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition, as determined by at least two cuttings, or until the job is accepted by the Owner, whichever occurs last.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Seed: Dry, fresh, re-cleaned seed of the latest crops and of the following proportions:

2.02 MIX A:

	Grass Type	% of Mixture	Min. % Germination
B.	Kentucky 31 Fescue	50	90
C.	N.K. 100 PERENNIAL RYE GRASS	25	85
D.	PENN LAWN FESCUE	25	90

2.03 MIX B:

	Grass Type	% of Mixture	Min. % Germination
B.	Merion Bluegrass	50	80
C.	Penn Lawn Fescue	30	90
D.	N.K. 106 Hybrid Rye Grass	20	85

2.04 ACCESSORIES

A. Mulching Material: Hemlock species wood cellulose fiber, dust form, free of growth or germination inhibiting ingredients.

B. Fertilizer: FS O-F-241, Type I, Grade A; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, to the following proportions: Nitrogen 10 percent, phosphoric acid 6 percent, soluble potash 4 percent.

C. Limestone: Ground dolomitic limestone containing a minimum of 90 percent calcium and magnesium carbonates. One hundred percent (100%) shall pass a No. 10 mesh screen and a minimum of 70 percent shall pass a No. 100 mesh screen.

D. Hydromulch: 84 percent Mechanically processed straw, 15 percent Mechanically processed reclaimed cotton plant material and 1 percent of tackifier, activators and additives; minimum of 90 percent organic material; moisture content of 12 percent, total carbon to nitrogen ratio, 40:1. Color to be natural green.

E. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 90 percent organic material measured by oven dry weight; pH range of 4 to 5 percent; moisture content of 30 percent; with moisture absorbtive capacity of 450 to 500 percent.

F. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

G. Stakes: Softwood lumber, chisel pointed.

H. String: Inorganic fiber.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing substrate and site conditions.

B. Verify that prepared soil base is ready to receive the work of this section.

C. Beginning of installation means installer accepts existing conditions.

3.02 PREPARATION

A. Area to be seeded shall be cultivated with a scarifier to a depth of 4 inches. All stones, sticks and debris one inch and larger shall be removed. Area shall be smoothly graded to proper elevations.

3.03 APPLICATION

A. Fill tank of mechanically agitated hydroseeding machine with sufficient water to suspend seed and fertilizers.

B. Add water slowly while adding hydromulch. See manufacturer's recommendations to determine the proper application rate.

C. Agitate for a minimum of ten minutes after adding the last amount of water and hydromulch.

D. Apply hydromulch with a hydraulic seeder at a rate of 46 lbs per 1000 sq ft. Apply in a uniform layer from 2 opposing directions to ensure complete soil coverage.

E. Do not hydroseed areas in excess of that which can be mulched on same day.

F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil. Discontinue watering if washing begins to occur.

G. Clean all surfaces which have received hydroseeding overspray.

H. Identify seeded areas with stakes and string around area periphery. Set string height to 24 inches. Space stakes at 8 feet on center.

3.04 MAINTENANCE

A. Maintain grass until job is accepted by the Owner or until the grass exhibits a vigorous growing condition, as determined by at least 2 cuttings, whichever occurs last.

B. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.

C. Neatly trim edges and hand clip where necessary.

D. Immediately remove clippings after mowing and trimming.

E. Water to prevent grass and soil from drying out.

F. Immediately reseed areas which show bare spots.

3.05 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Protect seeded areas with warning signs during maintenance period.

END OF SECTION 329219.16

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Corrugated polyethylene pipe.

B. Fittings and accessories.

1.02 RELATED SECTIONS

A. Section 312000 - Earth Moving.

1.03 REFERENCES

A. ASTM D2321 - Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.

B. ASTM F405 - Corrugated Polyethylene (PE) Tubing and Fittings.

C. ASTM F667 - Large Diameter Corrugated Polyethylene Tubing and Fittings.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide data on pipe, fittings and accessories.

C. Manufacturer's Instructions: Indicate special procedures and conditions required to install products specified.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of pipe runs, connections and invert elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable codes for materials and installation of the work of this section.

B. Install pipe in accordance with ASTM D2321.

1.07 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on the plans and as required by the manufacturer.

1.08 COORDINATION

A. Coordinate pipe installation with the trenching.

PART 2 - PRODUCTS

2.01 COMPONENTS

A. Corrugated Polyethylene Pipe: ASTM F405 or ASTM F667 corrugated polyethylene; N-12 manufactured by ADVANCED DRAINAGE SYSTEMS, INC. or specifically approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify that trench cut is ready to receive work and excavations, dimensions and elevations are as indicated on the plans.

3.02 PREPARATION

A. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

B. Excavate under provisions of Section 312000.

3.03 INSTALLATION

A. Install pipe and accessories in accordance with manufacturer's instructions and approved shop drawings.

B. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.

C. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope.

D. Lay pipe to slope gradients noted on the plans, with maximum variation from true slope of 1/8 inch in 10 feet.

E. Backfill under provisions of Section 312000.

3.04 TOLERANCES

A. Maximum Variation from Intended Invert Elevation: 1/2 inch.

B. Maximum Offset of Pipe from True Alignment: 1 inch.

3.05 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 014500.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.06 PROTECTION

A. Protect pipe from damage or displacement until backfilling operation is in progress.

END OF SECTION 334116

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. PVC pipe for drainage and sanitary connections.

B. Fittings and accessories.

1.02 RELATED SECTIONS

A. Section 312333 - Trenching

B. Section 312323.13 - Backfilling

1.03 REFERENCES

A. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and other Gravity Flow Applications.

B. ASTM D2729 - Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

C. ASTM D2855 - Recommended Practice for Making Solvent-Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings.

D. ASTM D3034 - Standard Specification for Type PDM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

E. ASTM D3212 - Standard Specifications for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: Provide data on pipe, fittings, accessories and marking tape.

1.05 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 017839.

B. Accurately record actual locations of pipe runs, connections and invert elevations.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable codes for materials and installation of the work of this section.

1.07 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on the plans and as required by the manufacturer.

1.08 COORDINATION

A. Coordinate pipe installation with trenching and installation of drainage structures.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. PVC Pipe: CERTAINTEED, JM, CARLON.

B. Joint Lubricant: Manufacturer's standard.

2.02 MATERIALS

A. PVC - ANSI/ASTM D3034, Type PSM, Polyvinyl Chloride (PVC) material; inside nominal diameter as indicated, integral bell and spigot end joints, class DR 18 or SDR 35 as indicated on plans. Joints meet or exceed ASTM D3212.

2.03 ACCESSORIES

A. Marking Tape - Solid plastic tape with a minimum total thickness of 4.5 mil. Tape resilient to alkalis, acids, and other destructive elements; of sufficient strength that layers cannot be separated by hand or by exposure to boiling water for a period of three hours. Green in color, minimum 3" wide with the words "Caution - Sanitary Sewer" repeated every 16-36 inches, conforming to AWPA uniform color code.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate.

B. Verify that trench cut is ready to receive work and excavations, dimensions and elevations are as indicated on the plans.

C. Inspect all pipe and fittings before installation. Remove defective pipe from site.

3.02 PREPARATION

A. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

B. Excavate under provisions of Section 312316. Excavate sufficient clearance at each bell or coupling to allow uniform bearing along the pipe barrel.

3.03 INSTALLATION

A. Install pipe and accessories in accordance with ASTM D2321.

B. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.

C. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope.

D. Lay pipe to slope gradients noted on the plans, with maximum variation from true slope of 1/8 inch in 10 feet.

E. Repair surface damage to any pipe protective coating in accordance with manufacturer's recommendations.

F. Backfill under provisions of Section 312323.13.

G. After partially backfilling, install marking tape 18 to 24 inches above crown of pipe.

H. Construct cleanouts at locations shown and as detailed on the drawings. Use PVC wyes, bends and pipe as appropriate. Extend cleanout pipe to grade and terminate with plug.

3.04 TOLERANCES

A. Maximum Variation from Intended Invert Elevation: 1/2 inch.

B. Maximum Offset of Pipe from True Alignment: 1 inch.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection under provisions of Section 014500.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.06 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Protect pipe from damage or displacement until backfilling operation is in progress.

END OF SECTION 334123

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Precast concrete catch basins and field inlets.

B. Castings.

1.02 REFERENCES

A. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

C. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

D. ASTM C55 - Standard Specification for Concrete Building Brick; 2017.

1.03 SUBMITTALS

A. Submit under provisions of Section 013300 - SUBMITTALS.

B. Shop Drawings: Indicate dimensions and details of catch basins and castings.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500 - PRODUCT DELIVERY, STORAGE, AND HANDLING.

B. Store products on firm and level ground.

C. Handle products in such a manner which will not induce unnecessary stresses, cause cracks to occur or damage the product in any way.

D. Any cracked or otherwise defective materials will be rejected.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Do not mix or place mortar if ambient temperature is below 40 degrees F.

1.06 COORDINATION

A. Coordinate work under provisions of Section 013100 - PROJECT MANAGEMENT AND COORDINATION.

B. Coordinate with excavation, backfilling, installation of piping and all other work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. OLD CASTLE PRECAST, INC.

B. PRECAST CONCRETE SALES, CO.

C. Substitutions shall be permitted only after receiving written approval from the Architect/Engineer in accordance with Section 012500 - SUBSTITUTION REQUEST PROCEDURES.

2.02 MATERIALS

A. Catch Basin and Field Inlet Sections: Reinforced precast concrete, lipped male/female joint, of the following materials:
   1. Concrete: ASTM C150/C150M, normal Portland cement, Type 1; minimum 4,000 psi strength at 28 days.
   2. Reinforcement: ASTM A615/A615M reinforcing bars.
   3. Castings: ASTM A48/A48M, Class 30B, cast iron construction, machined flat bearing surface, non-rocking; removable grate, capable of supporting the AASHTO HS-20-44 highway loading; free from blowholes, shrinkage, distortion, cracks or other defects; smooth and of uniform quality; size and pattern as indicated on the plans, manufactured by CAMPBELL FOUNDRY COMPANY or specifically approved equal.

2.03 ACCESSORIES

A. Brick: ASTM C55, Grade N, Type I - Moisture Controlled; normal weight; nominal modular size as required.

B. Mortar: A 1:1:5 ratio of Portland cement, masonry cement and sand, respectively. Add water as required to create a workable consistency.

C. Catch Basin Steps: Cast iron rungs; pattern number 2589 as manufactured by CAMPBELL FOUNDRY COMPANY; pattern number R-1980-C as manufactured by NEENAH FOUNDRY COMPANY, or specifically approved equal.

D. Concrete for Formed Invert: ASTM C150/C150M, Portland cement type I, cast in place; 3,000 psi minimum strength at 28 days; dimensions as indicated on the plans.

2.04 FABRICATION

A. Fabricate and reinforce catch basin to the dimensions as indicated on the plans.

B. Pipe Entry: Provide openings as required.

C. Steps: Set or drilled and grouted in the catch basin wall at 18 inches on center vertically.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing grades are as indicated on the plans.

B. Verify items provided by other sections of work are properly sized and located.

C. Verify that rough openings for piping are as required.

3.02 INSTALLATION

A. Form bottom of excavation clean and smooth to the correct elevation. Compact bottom of the excavation to a minimum of 95 percent of maximum dry density.

B. Place catch basin, secure and level, to the proper elevation. Utilize a placement method which will not damage or crack the catch basin.

C. Place catch basin sections plumb and level, trim to correct elevations.

D. Cut and fit for pipe. Seal openings in wall around pipe with brick and mortar. Establish elevations and pipe inverts for inlets and outlets as indicated on the plans. Trowel surfaces smooth.

E. When indicated on the plans, place concrete in base of catch basin as required to form invert to the dimensions indicated on the plans. Trowel smooth.

F. Set slab top on catch basin in a 1 inch mortar bed.

G. Mount casting in a 1 inch mortar bed over access opening. Install firm, level and to the required elevation.

H. If required to achieve proper elevation of casting, adjust with brick and mortar. A maximum height of 5 inches is permitted between the catch basin and the base of the casting. Maintain a maximum of 1 inch thickness of mortar between all bricks.

3.03 TOLERANCES

A. Maximum Variation from Proposed Rim Elevation: 1/4 inch.

B. Maximum Variation from Proposed Location: 1/2 inch.

3.04 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 014500 - QUALITY CONTROL.

B. Request inspection prior to backfilling around structure and prior to surface restoration.

3.05 PROTECTION

A. Protect finished work under provisions of Section 015000 - TEMPORARY FACILITIES AND CONTROLS.

B. Protect catch basin from damage or displacement until project is accepted by the Owner or Owner's Construction Representative.

END OF SECTION 334413.13

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Precast concrete manhole sections with tongue-and-groove joints, covers, anchorage and accessories.

1.02 RELATED SECTIONS

A. Section 312316 - Excavation

B. Section 312323.13 - Backfill.

1.03 REFERENCES

A. ASTM A48 - Gray Iron Castings.

B. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

C. ASTM C55 - Concrete Building Brick.

D. ASTM C150 - Portland Cement.

E. ASTM C443 - Joints for Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

F. ASTM C478 - Precast Reinforced Concrete Manhole Sections.

1.04 SUBMITTALS

A. Submit under provisions of Section 013300.

B. Shop Drawings: Indicate dimensions and details of manhole sections and castings.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Section 016500.

B. Store products on firm, level ground.

C. Handle products in a manner which will not induce unnecessary stresses, cause cracks to occur or damage the product in any way.

D. Any cracked or otherwise defective materials will be rejected.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not mix or place mortar if ambient temperature is below 40 degrees F.

1.07 COORDINATION

A. Coordinate the work under provisions of Section 013100.

B. Coordinate with installation of piping and all other work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. OLDCASTLE PRECAST, INC.

B. PRECAST CONCRETE SALES, CO.

C. Substitutions shall be permitted only after receiving written approval from the Engineer.

2.02 MATERIALS

A. Manhole Sections: ASTM C478 reinforced precast concrete lipped male/female joint, ASTM C443 gaskets; of the following materials:
   1. Concrete: ASTM C150, normal Portland cement Type I, minimum 4,000 psi strength at 28 days.
   2. Reinforcement: ASTM A615 reinforcing bars.

B. Castings: ASTM A48, Class 30B, cast iron construction, machined flat bearing surface, non-rocking, removable lid, open checkerboard grille lid design; able to support the AASHTO HS-20-44 highway loading; free from blowholes, shrinkage, distortion, cracks or other defects; smooth and of uniform quality; size and dimensions as indicated on the plans; manufactured by CAMPBELL FOUNDRY COMPANY or specifically approved equal.

2.03 ACCESSORIES

A. Brick: ASTM C55, Grade N, Type I - Moisture Controlled; normal weight; nominal modular size as required.

B. Mortar: A 1:1:5 ratio of Portland cement, masonry cement and sand, respectively. Add water as required to create a workable consistency.

C. Manhole Steps: Cast iron rungs; pattern number 2589-2252 as manufactured by CAMPBELL FOUNDRY COMPANY, or specifically approved equal.

D. Concrete for Formed Invert: ASTM C150 Portland cement Type I, cast in place; 3,000 psi minimum strength at 28 days; wood float finish; dimensions as indicated on the plans.

2.04 FABRICATION

A. Shaft Construction: Concentric with cone top section; lipped male/female joints with rubber gasket; dimensions and reinforcement as indicated on the plans.

B. Pipe Entry: Provide openings as required.

C. Steps: Set or drilled and grouted into manhole wall at 18 inches on center vertically.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions.

B. Verify existing grades are as indicated on the plans.

WHITESTONE

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
whitestoneassoc.com

REPORT OF GEOTECHNICAL INVESTIGATION

PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 NORTH STREET
WHITE PLAINS, WESTCHESTER COUNTY, NEW YORK

Prepared for:

H2M ARCHITECTS & ENGINEERS
538 Broad Hollow Road
Fourth Floor East
Melville, New York 11747

Prepared by:

WHITESTONE
30 Independence Boulevard, Suite 250
Warren, New Jersey 07059

Mudar Khantamr, P.E.
Associate

Laurence W. Keller, P.E.
Vice President

Whitestone Project No.: GJ2219662.Y00
November 2, 2022

WHITESTONE

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
whitestoneassoc.com

November 2, 2022

via email

H2M ARCHITECTS & ENGINEERS
538 Broad Hollow Road
Fourth Floor East
Melville, New York 11747

Attention: Cole Podolsky, LEED AP
Project Designer

Regarding: REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 NORTH STREET
WHITE PLAINS, WESTCHESTER COUNTY, NEW YORK
WHITESTONE PROJECT NO.: GJ2219662.Y00

Dear Mr. Podolsky:

Whitestone Associates Engineering & Geology NY, PLLC in conjunction with Whitestone Associates, Inc. (collectively, Whitestone) is pleased to submit the attached *Report of Geotechnical Investigation* for the above-referenced project. The attached report presents the results of Whitestone's soils exploration efforts and presents recommendations for design of the proposed structural foundations, floor slabs, pavements, and related earthwork.

Whitestone's Geotechnical Division appreciates the opportunity to be of continued service to H2M Architects & Engineers (H2M). Please note that Whitestone has the capability to conduct the additional geotechnical engineering services recommended herein.

Please contact us at (908) 668-7777 with any questions or comments regarding the enclosed report.

Sincerely,

WHITESTONE

Mudar Khantamr, P.E.
Associate

Laurence W. Keller, P.E.
Vice President

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REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 North Street
White Plains, Westchester County, New York

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SECTION 1.0
Summary of Findings

Whitestone has conducted an exploration and evaluation of the subsurface conditions for the proposed White Plains High School improvements located at 550 North Street in White Plains, Westchester County, New York. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

At the time of Whitestone's exploration, the site housed the White Plains High School including multiple buildings, athletic fields, tennis courts, and associated pavements, landscaping, and utilities. The existing pavements were observed to be in fair to poor structural condition with multiple areas of variable cracking.

Based on the September 2022 *Soil Boring Plan* prepared by H2M, the proposed redevelopment is anticipated to include demolishing the existing building located within the northwestern portion of the site and constructing an approximately 36,000-square feet building, pavement areas, and turf athletic field with associated subsurface drainage. The proposed building is anticipated to be less than three stories in height and will not contain any below-grade levels. Detailed grading has not been finalized and the finished floor elevation of the proposed structure or pavement grades are not known at this time. However, based on existing grades, Whitestone anticipates that the proposed site will be redeveloped at or near existing grades with maximum cut/fill on the order of five feet.

The subsurface exploration included conducting a reconnaissance of the project site, drilling eight soil test borings and one pavement core, conducting in-situ infiltration testing, and collecting soil samples for laboratory analyses. The data from this exploration and analysis were analyzed by Whitestone in light of the project information provided by H2M.

A summary of Whitestone's findings is presented below in tabular format and detailed descriptions of the subsurface conditions encountered are presented in Section 4.0.

Subsurface Profile	Description	Bottom of Stratum (fbgs)
Surface Cover Material	The soil borings encountered approximately six inches of topsoil at the surface. The pavement core conducted within the existing paved area encountered approximately 3.5 inches of asphaltic concrete at the surface underlain by approximately 5.5 inches of granular subbase materials.	0.5 to 0.75
Glacial Deposits	Consisting of poorly graded sand (USCS: SP) with variable amounts of silt and clay (USCS: SM and SC), and sandy silt (USCS: ML) with variable amounts of gravel and lesser amounts of apparent cobbles/boulders.	28.4

Subsurface Profile	Description	Bottom of Stratum (fbgs)
Groundwater	Static groundwater was not encountered within the borings conducted to the deepest depth explored of approximately 28.4 fbgs. However, perched/trapper water was encountered within several soil borings at depths ranging from approximately nine fbgs to 10 fbgs. Static groundwater and perched/trapped water conditions likely will fluctuate seasonally, tidally, and following periods of precipitation.	+28.4

fbgs: feet below ground surface

Recommendations developed upon consideration of these findings are summarized in the table below and presented in greater detail in the indicated sections of the report.

Geotechnical Considerations	Recommendation	Report Section
Foundation System	Whitestone recommends supporting the proposed structure on conventional shallow foundations designed to bear within the underlying naturally occurring site soils and/or on properly placed and compacted structural fill.	5.5
Floor Slabs and Pavements	Whitestone anticipates that the underlying natural soils and/or controlled structural fill will be suitable for support of the proposed floor slabs and pavements provided these materials are properly recompacted, proofrolled, and evaluated during the construction phase.	5.6 & 5.7
On-Site Soil Reuse	Whitestone anticipates that a majority of the underlying natural materials will be suitable for selective reuse as structural fill and/or backfill throughout the site provided that moisture contents are controlled within two percent of the optimum moisture content.	5.3
Difficult Excavation Considerations	Naturally occurring cobbles/boulders were encountered during this subsurface investigation at highly variable depths ranging between approximately 4.0 fbgs and 28.4 fbgs. As such, removal of dense glacial materials in deeper excavations may be required during construction. Excavation difficulties will be more prevalent in confined excavations, such as foundations and utilities, footing and utility excavations may inadvertently become oversized due to the presence of boulders and require additional backfill materials.	5.2

SECTION 2.0
Introduction

2.1 AUTHORIZATION

Cole Podolsky, LEED AP of H2M issued authorization to Whitestone to conduct a geotechnical investigation and SWM area evaluation on this site relevant to the proposed site improvements. The geotechnical investigation was conducted in general accordance with Whitestone's October 3, 2022 proposal to H2M.

2.2 PURPOSE

The purpose of this subsurface exploration and analysis was to:

- ascertain the various soil profile components at test locations;
- estimate the engineering characteristics of the proposed foundation bearing and subgrade materials;
- provide geotechnical criteria for use by the design engineers in preparing the foundation and floor slab design;
- provide recommendations for required earthwork and subgrade preparation;
- record groundwater levels and/or bedrock levels (where encountered) at the time of the investigation and discuss the potential impact on the proposed construction; and
- recommend additional investigation and/or analysis (if warranted).

2.3 SCOPE

The scope of the exploration and analysis included the subsurface exploration; field testing and sampling; laboratory analysis; and a geotechnical engineering analysis and evaluation of the subsurface materials. This *Report of Geotechnical Investigation* is limited to addressing the site conditions related to the physical support of the proposed construction. Any references to suspicious odors, materials, or conditions are provided strictly for the client's information.

2.3.1 Field Exploration

Field exploration of the project site was conducted by means of eight soil borings (identified as B-1 through B-8) advanced with a track-mounted drill rig equipped with hollow stem augers and split-spoon sampling

techniques, one pavement core, and seven in-situ infiltration tests (identified as I-1 through I-7). The soil borings were conducted within the areas of the proposed site improvements to depths ranging from approximately four fbgs to 28.4 fbgs. The soil borings were backfilled with excavated soils generated from the investigation. The locations of the soil borings are shown on the *Test Location Plan* included as Figure 1.

The borings were conducted in the presence of a Whitestone engineer who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. The boring locations were located in the field using normal taping procedures and estimated right angles. These locations are presumed to be accurate within a few feet.

Soil borings and standard penetration tests (SPTs) were conducted in general accordance with ASTM International (ASTM) designation D-1586. The SPT resistance value (N) can be used as an indicator of the consistency of fine-grained soils and the relative density of coarse-grained soils. The N-value for various soil types can be correlated with the engineering behavior of earthworks and foundations.

Groundwater level observations, where encountered, were recorded during and at the completion of field operations prior to backfilling the borings. Seasonal variations, temperature effects, and recent rainfall conditions may influence the levels of the groundwater, and the observed levels will depend on the permeability of the soils. Groundwater elevations derived from sources other than seasonally observed groundwater monitor wells may not be representative of true groundwater levels.

2.3.2 Laboratory Program

In addition to the field investigation, a laboratory program was conducted to determine additional, pertinent engineering characteristics of representative samples of on-site soils. The laboratory program was conducted in general accordance with applicable ASTM standard test methods and included physical/textural testing of representative samples of various strata.

Physical/Textural Analysis: Representative samples of selected strata encountered were subjected to a laboratory program that included Atterberg limits determination (ASTM D-4318), moisture content determinations (ASTM D-2216), and washed gradation analyses (ASTM D-422) in order to conduct supplementary engineering soil classifications in general accordance with ASTM D-2487. The soil strata tested were classified by the Unified Soil Classification System (USCS) and results of the laboratory testing are summarized in the following table.

PHYSICAL/TEXTURAL ANALYSES SUMMARY							
Source of Sample	**Sample Number**	**Depth (fbgs)**	**Natural Moisture (%)**	**Liquid Limit (%)**	**Plastic Index (%)**	**Passing No. 200 Sieve (%)**	**USCS Classification**
B-1	S-4	6.0 - 8.0	9.8	NP	NP	33.2	SM
B-4	S-5	8.0 - 10.0	4.7	NP	NP	33.1	SM
B-8	S-3	4.0 - 6.0	6.3	27	11	44.5	SC

Notes: NP = Non-Plastic

The engineering classifications are useful when considered in conjunction with the additional site data to estimate properties of the soil types encountered and to predict the soil's behavior under construction and service loads. Laboratory test results are provided in Appendix B.

2.3.3 Infiltration Testing

Infiltration tests were conducted at the anticipated level of infiltration within the proposed SWM areas at borings B-1, B-2, and B-4 through B-8. Infiltration testing was conducted in general accordance with the *New York State Stormwater Design Manual*. The tests conducted resulted in field infiltration rates ranging from approximately less than 0.2 inches per hour (iph) to 6.7 iph. Infiltration test results are provided in Appendix C.

SECTION 3.0
Site Description

3.1 LOCATION AND DESCRIPTION

The subject site is located at 550 North Street in White Plains, Westchester County, New York. The site is bound to the north by a church and Bryant Avenue, to the east by Bryant Avenue and Westchester Avenue, to the south by residential buildings, and to the west by North Street. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

3.2 EXISTING CONDITIONS

Surface Cover/Development: At the time of Whitestone's exploration, the site housed the White Plains High School including multiple buildings, athletic fields, tennis courts, and associated pavements, landscaping, and utilities. The existing pavements were observed to be in fair to poor structural condition with multiple areas of variable cracking.

Topography: A topographic survey was not available at the time of Whitestone's investigation, however, based on visual observation, the site appeared be generally flat lying with moderate west dipping slopes within the central portion of the site and overall grade changes on the order of approximately 50 feet across the property.

Utilities: At the time of Whitestone's subsurface field investigation, the subject site was serviced by public and private utilities including aboveground and underground electric, telephone, communication, water, natural gas, sanitary and stormwater sewer lines. Other utilities were not observed at the subject site by Whitestone but may be present. The utility information contained in this report is presented for general discussion only and is not intended for construction purposes.

Site Drainage: Surface runoff generally consists of sheet flow across the existing ground surface and generally appeared to flow in an easterly direction.

3.3 SITE GEOLOGY

The area of the subject site is situated within the Manhattan Prong of the New England Uplands Physiographic Province of the Northeastern United States. The site reportedly is underlain by the Middle Ordovician to Lower Cambrian-age Hartland Formation. This formation generally consists of basal amphibolite overlain by pelitic schists. Overburden materials in the region also typically include glacial

deposits associated with Wisconsinan Glaciation that reached a most southerly advance approximately 20,000 years ago. Overlying materials also include manmade fill associated with past and present development of the site.

3.4 PROPOSED CONSTRUCTION

Based on the *Soil Boring Plan* prepared by H2M, the proposed redevelopment is anticipated to include demolishing the existing building located within the northwestern portion of the site and constructing an approximately 36,000-square feet building, pavement areas, and turf athletic field with associated subsurface drainage. The proposed building is anticipated to be less than three stories in height and will not contain any below-grade levels.

Detailed grading has not been finalized and the finished floor elevations of the proposed structure or pavement grades are not known at this time. However, based on existing grades, Whitestone anticipates that the proposed site will be redeveloped at or near existing grades with maximum cut/fill on the order of five feet.

The anticipated maximum loads for the proposed structures are expected to be as follows:

- column loads - 225 kips;
- wall loads - 3.0 kips/linear foot;
- floor slab loads - 125 pounds per square foot (psf);

Detailed structural information has not yet been provided. The above-referenced loads are based on past experience with similar facilities and should be confirmed by the project structural engineer. The scope of Whitestone's investigation and the professional advice contained in this report were generated based on the project details and loading noted herein. Any revisions or additions to the design details enumerated in this report should be brought to the attention of Whitestone for additional evaluation as warranted.

SECTION 4.0
Subsurface Conditions

4.1 SUBSURFACE SOIL CONDITIONS

Details of the subsurface materials encountered are presented on the *Records of Subsurface Exploration* presented in Appendix A of this report. The subsurface soil conditions encountered in the soil borings consisted of the following generalized strata in order of increasing depth.

Surface Cover: The subsurface tests were conducted within the existing landscaped and paved areas. The soil borings encountered approximately six inches of topsoil at the surface. The pavement core conducted within the existing paved area encountered approximately 3.5 inches of asphaltic concrete at the surface underlain by approximately 5.5 inches of granular subbase materials.

Glacial Deposits: Underlying the surface cover, the subsurface tests encountered natural glacial deposits consisting of poorly graded sand (USCS: SP) with variable amounts of silt and clay (USCS: SM and SC), and sandy silt (USCS: ML) with variable amounts of gravel and occasional apparent cobbles/boulders. The borings were terminated within the glacial deposits at depths ranging from approximately four fbgs to 28.4 fbgs. SPT N-values within coarse-grained portions of this stratum ranged between two blows per foot (bpf) and refusal (defined as greater than 50 blows per six-inch advancement of the split-spoon sampler), generally indicating very loose to very dense relative density and averaging approximately 29 bpf.

4.2 GROUNDWATER

Static groundwater was not encountered within the borings conducted to the deepest depth explored of approximately 28.4 fbgs. However, perched/trapper water was encountered within several soil borings at depths ranging from approximately nine fbgs to 10 fbgs. Static groundwater and perched/trapped water conditions likely will fluctuate seasonally and following periods of precipitation.

SECTION 5.0
Conclusions and Recommendations

5.1 GENERAL

Whitestone recommends supporting the proposed structure on conventional shallow foundations bearing on the underlying natural soils and/or properly placed structural fill that are properly inspected, placed, and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report. The proposed floor slabs and pavements also may be supported on the underlying natural soils and/or properly placed structural fill.

Machine auger and split-spoon refusal on naturally deposited cobbles/boulders was encountered during this subsurface investigation at highly variable depths. As such, removal of dense glacial materials in deeper excavations may be required during construction. Excavation difficulties will be more prevalent in confined excavations, such as foundations and utilities, footing and utility excavations may inadvertently become oversized due to the presence of boulders and require additional backfill materials.

5.2 SITE PREPARATION AND EARTHWORK

Surface Cover Stripping and Demolition: Prior to stripping operations, all utilities should be identified and secured. The existing structure and pavements to be demolished and stripped should be removed from within the limits of any areas requiring structural fill. Existing structural elements, such as foundation walls, or any concrete foundations, walls or slabs encountered during excavations, should be removed entirely from below proposed foundations and associated zones of influence (as determined by lines extending at least one foot laterally beyond footing edges for each vertical foot of depth) and excavated to at least two feet below proposed construction subgrade levels elsewhere. Foundations and slabs may remain in place below these depths below proposed ground-supported slabs, drive isles, and landscaped areas provided there is no interference with future construction. Any existing slab to remain should be thoroughly broken such that maximum particle size is 12 inches to allow vertical drainage of water. The demolition contractor should be required to conduct all earthwork in accordance with the recommendations in this report including backfilling any excavation, utility, etc. with structural fill. All fill or backfill placed in structural areas during any demolition operations should be placed as structural fill in accordance with Section 5.2, 5.3, and 5.11 of this report.

Difficult Excavation Considerations: Naturally deposited cobbles/boulders were encountered during this subsurface investigation at highly variable depths ranging between approximately four fbgs and 28.4 fbgs. As such, removal of dense glacial materials in deeper excavations may be required during construction, depending on final grading. Excavation difficulties will be more prevalent in confined excavations, such as foundations and utilities, footing and utility excavations may inadvertently become oversized due to the presence of boulders and require additional backfill materials.

Surface Preparation/Proofrolling: Prior to placing any fill or subbase materials to raise grades to the desired subgrade elevations, the existing exposed soils should be compacted to a firm and unyielding surface with several passes in two perpendicular directions of a minimum 10-ton, smooth drum roller. The surface should be proofrolled with a loaded tandem axle truck in the presence of the geotechnical engineer to help identify soft or loose pockets which may require removal and replacement or further investigation. Any fill or backfill should be placed and compacted in accordance with Section 5.3.

Weather Performance Criteria: Because portions of the site soils are moderately to highly moisture sensitive and may soften when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations and prepared subgrades to rainfall. Accordingly, excavation and fill placement procedures should be conducted during favorable weather conditions. Overexcavation of saturated soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

Subgrade Protection and Inspection: Every effort should be made to minimize disturbance of the on-site materials by construction traffic and surface runoff. The on-site soils will deteriorate when subjected to repeated wetting and construction traffic and likely will require extensive drying or overexcavation and replacement. Construction schedules and budgets should account for contingencies, such as importing materials to raise grades or restore overexcavations when construction must occur following wet weather or on an expedited basis. However, if properly protected and maintained during warm, dry weather as recommended herein, the site soils will provide adequate support for the proposed construction. The site contractors should employ necessary means and methods to protect the subgrade including, but not limited to the following:

- leaving the existing pavement in place as long as practical to protect the subgrade from freeze-thaw cycles and exposure to inclement weather;
- sealing exposed subgrade soils on a daily basis with a smooth drum roller operated in static mode;
- regrading the site as needed to maintain positive drainage away from construction areas;
- removing wet surficial soils and ruts immediately; and
- limiting exposure to construction traffic especially following inclement weather and subgrade thawing.

5.3 STRUCTURAL FILL AND BACKFILL

Imported Fill Material: Any imported material placed as structural fill or backfill to raise elevations or restore design grades should consist of clean, relatively well graded sand or gravel with a maximum particle

size of three inches and five percent to 10 percent of material finer than a #200 sieve. Silts, clays, and silty or clayey sands and gravels with higher percentage of fines and with a liquid limit less than 40 and a plasticity index less than 20 may be considered subject to the owner's approval, provided that the required moisture content and compaction controls are met. The material should be free of clay lumps, organics and deleterious material. Imported structural fill material should be approved by a qualified geotechnical engineer prior to delivery to the site.

On-Site Material: Based on the conditions disclosed by the soil borings, Whitestone anticipates that a majority of the underlying natural soils will be suitable for selective reuse as structural fill and/or backfill provided moisture contents are controlled within two percent of the optimum during favorable weather conditions. The reuse of the fine-grained soils (USCS: ML) and granular site soils with more than 12 percent fines (USCS: SM) typically is possible only during extended periods of ideal weather conditions. Reuse of these soils may require mixing with a granular material, extensive moisture conditioning, and/or drying to facilitate their reuse, workability, and compaction in fill areas.

The on-site soils will become increasingly difficult to reuse and compact where wetted beyond the optimum moisture content. Immediate re-use of on-site soil should not be anticipated. Materials that are, or become, exceedingly wet likely will require discing and aerating that may not be practical during wet seasons. Alternatively, imported fill materials may be used to attain the desired grades and expedite earthwork operations. The stripped asphaltic concrete pavement and topsoil should not be used as fill or backfill.

Cobble- and boulder-sized materials or similarly sized materials greater than three inches in diameter will need to be separated from on-site soils to be placed as structural fill or backfill. Cobble-sized materials between three inches to 12 inches may be crushed or individually placed in structural fill or backfill layers deeper than two feet below proposed foundation and pavement subgrade levels. Care must be taken to individually seat any large particles and to compact soil around large particles with hand operated equipment to minimize risk of void formation. Boulder-sized materials greater than 12 inches in diameter need to be crushed prior to replacement as structural fill materials. Materials greater than three inches in size should be placed a minimum of three feet from utilities.

Demolition Material: Demolition material, free of environmental restrictions, may be used as fill material provided the material is properly segregated and processed as recommended herein. Concrete masonry materials, if generated, should be crushed to a well graded blend with a maximum size of three inches in diameter. Stripped asphaltic materials and deleterious building materials such as wood, insulation, metal shingles etc. should not be used as general structural fill material.

Compaction and Placement Requirements: All fill and backfill should be placed in maximum nine- inch loose lifts and compacted to 95 percent of the maximum dry density within two percent of the optimum moisture content as determined by ASTM D 1557 (Modified Proctor). Whitestone recommends using a vibratory drum roller to compact the on-site soils or a small handheld vibratory compactor within excavations.

Structural Fill Testing: A sample of the imported fill material or any on-site material proposed for reuse as structural fill or backfill should be submitted to the geotechnical engineer for analysis and approval at least one week prior to its use. The placement of all fill and backfill should be monitored by a qualified engineering technician to ensure that the specified material and lift thicknesses are properly installed. A sufficient number of in-place density tests should be conducted to ensure that the specified compaction is achieved throughout the height of the fill or backfill.

5.4 GROUNDWATER CONTROL

Static groundwater was not encountered within borings conducted to the deepest depth explored of approximately 28.4 fbgs. However, perched/trapper water was encountered within several soil borings at depths ranging from approximately nine fbgs to 10 fbgs. As such, Whitestone anticipates that static groundwater will be deeper than proposed foundation and utility excavations and does not anticipate the need for extensive dewatering or permanent groundwater control. Trapped/perched water may be encountered within the finer-grained natural site soils, especially following precipitation events. As such, construction phase dewatering of trapped/perched water through the use of gravity fed sump pumps should be anticipated during excavation activities for this site. A gravity fed sump pump should be suitable for minor temporary dewatering of any trapped water or surface runoff encountered during excavations.

Because the subsurface soils will soften when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations to rainfall. Overexcavation of saturated soils and replacement with controlled structural fill and/or one foot to two feet of open graded gravel (such as 3/4-inch clean crushed stone) may be required prior to resuming work on disturbed subgrade soils.

5.5 FOUNDATIONS

Foundation Design Criteria: Whitestone recommends supporting the proposed structures on either conventional shallow spread foundations designed to bear within the underlying natural materials or controlled structural fill provided these materials are properly evaluated, placed and compacted in accordance with the recommendations in this report. Foundations bearing within the natural site soils or controlled structural fill may be designed to impart a maximum allowable net bearing pressure of 4,000 pounds per square foot.

All footing bottoms should be improved by in-trench compaction in the presence of the owner's geotechnical engineer. Regardless of loading conditions, proposed foundations should be sized no less than minimum dimensions of 24 inches for continuous wall footings and 36 inches for isolated column footings.

Below-grade wall footings should be designed so that the maximum toe pressure due to the combined effect of vertical loads and overturning moment does not exceed the recommended maximum allowable net bearing pressure. In addition, positive contact pressure should be maintained throughout the base of the footings such that no uplift or tension exists between the base of the footings and the supporting soil. Uplift loads should be resisted by the weight of the concrete. Lateral resistance should be provided by friction resistance at the base of the footings. A coefficient of friction against sliding of 0.35 is recommended for use for foundations bearing within on-site soils or imported structural fill soils.

Foundation Inspection/Overexcavation Criteria: Whitestone recommends that the suitability of the bearing soils along and below the footing bottoms be verified by a geotechnical engineer prior to placing concrete for the footings. Where areas of unsuitable materials are encountered in footing excavations, overexcavation and recompaction or replacement may be necessary to provide a suitable footing subgrade in accordance with Sections 5.2 and 5.3. Any overexcavation to be restored with structural fill will need to extend at least one foot laterally beyond footing edges for each vertical foot of overexcavation. Lateral overexcavation can be reduced if the grade is restored with lean concrete or approved flowable fill. The bottom of overexcavation should be compacted with vibrating plates or plate tampers ("jumping jacks") to compact locally disturbed materials.

Settlement: Whitestone estimates post construction settlements of proposed foundations of less than one inch if the recommendations outlined in this report are properly implemented. Differential settlements of building foundations should be less than one-half inch.

Frost Coverage: Footings subject to frost action should be placed at least 42 inches below adjacent exterior grades or the depth required by local building codes to provide protection from frost penetration. Interior footings not subject to frost action could be placed at a minimum depth of 18 inches below the slab subgrade provided the footings bear on properly prepared site soils or on properly placed structural subgrade.

5.6 FLOOR SLAB

Whitestone anticipates that the underlying natural soils and/or compacted structural fill and/or backfill placed to raise or restore design elevations are expected to be suitable for support of the proposed floor slabs provided these materials are properly compacted and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Any areas that are, or become, softened or disturbed as a result of wetting and/or repeated exposure to construction traffic should be removed and replaced with compacted structural fill. The properly prepared on-site soils are expected to yield a minimum subgrade modulus (k) of 150 psi/in.

A minimum four-inch layer of coarse aggregate, such as AASHTO #57 stone, dense graded aggregate, or equal, should be installed below ground-supported floor slabs to provide a capillary break. An impervious membrane also should be provided as a moisture vapor barrier beneath all floor slabs.

5.7 PAVEMENT DESIGN CRITERIA

General: Whitestone anticipates that the underlying natural materials, and/or compacted structural fill and/or backfill placed to raise or restore design elevations are expected to be suitable for support of the proposed pavements provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Localized areas of overexcavation may be anticipated if the subgrades are exposed to precipitation.

Design Criteria: A California Bearing Ratio value of five has been assigned to the properly prepared subgrade soils for pavement design purposes based on laboratory test results and climatic factors. This value was correlated with pertinent soil support values and assumed traffic loads to prepare flexible and rigid pavement designs per the AASHTO *Guide for the Design of Pavement Structures*.

Design traffic loads were assumed based on typical volumes for similar facilities and correlated with 18-kip equivalent single axle loads (ESAL) for a 20 year life. An estimated maximum load of 25,000 ESAL was used for all pavement areas assuming the pavement primarily will accommodate both automobile and limited heavier truck traffic. Actual pavement loads should be less than this value.

Pavement Sections: The recommended flexible pavement section is presented below:

FLEXIBLE PAVEMENT SECTION		
Layer	**Material**	**Thickness (Inches)**
Asphalt Surface	NYSDOT Type 7 or 7F Top	1.5
Asphalt Base	NYSDOT Type 3 Binder	2.5
Granular Subbase	NYSDOT Type 2 Subbase	6.0

A rigid concrete pavement should be used to provide suitable support at areas of high traffic or severe turns (such as at ingress/egress locations). The recommended rigid pavement is presented below in tabular format:

RIGID PAVEMENT SECTION		
Layer	**Material**	**Thickness (Inches)**
Surface	4,000 psi air-entrained concrete	5.0[1]
Base	NYSDOT Type 2 Subbase	6.0

Note[1]: The outer edges of concrete pavements are susceptible to damage as trucks move from rigid pavement to adjacent flexible pavement. Therefore, the thickness at the outer two feet of the rigid concrete pavement should be 12 inches.

5.8 LATERAL EARTH PRESSURES

General: No proposed retaining structures were identified on the *Soil Boring Plan* prepared by H2M however, below-grade walls may be required. While the design and investigation of retaining structures are beyond Whitestone's current scope of work, Whitestone would be pleased to assist with the calculation of lateral earth pressures based on the soil parameters presented herein during the structural design phase when final grading and wall geometries are available.

Lateral Earth Pressures: Temporary retaining structures and permanent retaining/below-grade walls may be required to resist lateral earth pressures. Proposed retaining/below-grade walls must be capable of withstanding active and at-rest earth pressures. Retaining/below-grade walls free to rotate generally can be designed to resist active earth pressures. Retaining/below-grade walls corners and restrained walls need to be designed to resist at-rest earth pressures. Such structures should be properly designed by the Owner's engineer. The following soil parameters apply to the encountered subsurface strata and may be used for design of the proposed temporary and permanent retaining structures.

LATERAL EARTH PRESSURE PARAMETERS		
Parameter	**On-Site Soils**	**Imported Granular Backfill**
Moist Density (γ_{moist})	140 pcf	140 pcf
Internal Friction Angle (φ)	28°	30°
Active Earth Pressure Coefficient (K_a)	0.36	0.33
Passive Earth Pressure Coefficient (K_p)	2.77	3
At-Rest Earth Pressure Coefficient (K_o)	0.53	0.5

Lateral earth pressure will depend on the backfill slope angle and the wall batter angle. A sloped backfill will add surcharge load and affect the angle of the resultant force. The effect of other surcharges will also need to be included in earth pressure calculations, including the loads imposed by adjacent structures and traffic. The effects of proposed sloped backfill surface grades, and proposed slopes beyond the toe of the retaining structure, if applicable, must be considered when calculating resultant forces to be resisted by the retaining structure. A coefficient of friction of 0.35 against sliding can be used for concrete on the existing site soils. Retaining/below-grade wall footings should be designed so that the combined effect of vertical and horizontal resultants and overturning moment does not exceed the maximum soil bearing capacity provided in Section 5.5.

Backfill Criteria: Whitestone recommends that granular soils be used to backfill behind the proposed retaining/below-grade walls. The granular backfill materials should consist of clean, relatively well graded sand or gravel with a maximum particle size of three inches and five percent to 15 percent of material finer than a #200 sieve. The material should be free of clay lumps, organics, and deleterious material. Limited portions of the on-site soils encountered consisted of poorly graded sand (USCS: SP) which are anticipated

to be satisfactory for retaining/below-grade wall backfill, if encountered during site excavations. The remaining portions of the existing site soils are not anticipated to be suitable for retaining/below-grade wall backfill. Cobbles/boulders greater than three inches should also not be used as backfill. Accordingly, imported granular soils may be required. A maximum density of 140 pcf should not be exceeded to avoid creating excessive lateral pressure on the walls during compaction operations.

Whitestone recommends that backfill directly behind any walls be compacted with light, hand-held compactors. Heavy compactors and grading equipment should not be allowed to operate within a zone of influence measured at a 45-degree angle from the base of the walls during backfilling to avoid developing excessive temporary or long-term lateral soil pressures.

Wall Drainage: Positive gravity drainage of the backfill should be provided at the base of the retaining/below-grade walls by a series of perforated pipes surrounded by at least 12 inches of clean crushed stone that discharges into a stormwater sewer or daylight to appropriate site surface drainage. Whitestone recommends that a two-foot wide zone of clean crushed stone or washed sand, separated from the backfill by a filter fabric, be constructed adjacent to the back of the wall. This zone should prevent the buildup of hydrostatic pressures and pressures from freezing moisture in the backfill. The vertical drain should be tied into the gravity drainage system (perforated pipe) installed at the base of the wall. Alternatively, temporary retaining walls may include weep holes instead of a drain tied to the site drainage system. If wall drainage is not provided, the wall should be designed to withstand full hydrostatic pressure.

Whitestone should be notified if any other retaining structures or design considerations requiring lateral earth pressure estimations are proposed. Specific recommendations for temporary retaining structures are beyond Whitestone's scope of work.

5.9 SEISMIC AND LIQUEFACTION CONSIDERATIONS

Based on a review of the subsurface conditions relevant to the *New York State International Building Code (2020)*, the subject site may be assigned a Site Class D. Based on the seismic zone and soil profile liquefaction considerations are not expected to have a substantial impact on design.

5.10 EXCAVATIONS

The soils encountered during this investigation within anticipated excavation depths are at least consistent with Type C Soil Conditions as defined by 29 CFR Part 1926 (OSHA) which require a maximum unbraced excavation angle of 1.5:1 (horizontal:vertical). Actual conditions encountered during construction should be evaluated by a competent person (as defined by OSHA) to ensure that safe excavation methods and/or shoring and bracing requirements are implemented.

5.11 SUPPLEMENTAL POST INVESTIGATION SERVICES

Supplemental Borings and Test Pits/ Final Design Review: Apparent naturally deposited cobbles/boulders were encountered during this subsurface investigation at highly variable depths ranging between approximately four fbgs and 28.4 fbgs. As such, removal of dense glacial materials in deeper excavations may be required during construction. Whitestone recommends that a supplemental subsurface investigation designed to address site-specific conditions for proposed construction, including refusal depths on apparent obstructions within the natural glacial deposits, should be conducted following demolition of the existing structures and finalization of the design concept, structural loading, grading, and general site layout. The final subsurface investigation and geotechnical evaluation should be conducted to obtain subsurface information across the site at more closely spaced intervals within the building footprint and new pavements areas as well as to confirm the recommendations provided within this report.

Construction Monitoring and Testing: The owner's geotechnical engineer with specific knowledge of the subsurface conditions and design recommendations should conduct inspection, testing, and consultation during construction as described in previous sections of this report. Monitoring and testing should also be conducted to verify that the existing site structures are properly demolished and subsequently backfilled, existing surface cover materials are properly removed, and suitable materials used for controlled fill are properly placed and compacted over suitable subgrade soils. The proofrolling of all subgrades prior to structural support should be witnessed and documented by the owner's geotechnical engineer.

SECTION 6.0
General Comments

Supplemental recommendations may be required upon finalization of construction plans or if significant changes are made in the characteristics or location of the proposed structure. Soil bearing conditions should be checked at the appropriate time for consistency with those conditions encountered during Whitestone's geotechnical investigation.

The recommendations presented herein should be utilized by a qualified engineer in preparing the project plans and specifications. The engineer should consider these recommendations as minimum physical standards which may be superseded by local and regional building codes and structural considerations. These recommendations are prepared for the sole use of H2M Architects & Engineers for the specific project detailed and should not be used by any third party. These recommendations are relevant to the design phase and should not be substituted for construction specifications.

The possibility exists that conditions between borings may differ from those at specific boring locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may alter soil and rock conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered.

Whitestone assumes that a qualified contractor will be employed to conduct the construction work, and that the contractor will be required to exercise care to ensure all excavations are conducted in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent properties and maintaining slope stability. Whitestone recommends that the services of the geotechnical engineer be engaged to test and evaluate the soils in the footing excavations prior to concreting in order to determine that the soils will support the bearing capacities. Monitoring and testing also should be conducted to verify that suitable materials are used for controlled fills and that they are properly placed and compacted over suitable subgrade soils.

The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information and the design details furnished by H2M Architects & Engineers. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties are implied or expressed.

WHITESTONE

FIGURE 1
Test Location Plan

L:\Job Folders\2022\2219662G\Drawings and Plans\GJ2219662.Y00 TLP.dwg

0 60

1 inch = 60 ft.

LEGEND

B-1 — BORING

(I-1) — INFILTRATION TEST

SUBJECT PROPERTY BOUNDARY

REFERENCE

THIS PLAN IS BASED ON A SEPTEMBER 2022 WHITE PLAINS CITY SCHOOL DISTRICT HIGH SCHOOL SOIL BORING PLAN PREPARED BY H2M ARCHITECTS & ENGINEERS & ALL SITE LOCATIONS ARE APPROXIMATE.

WHITESTONE
An Employee-Owned Company
30 INDEPENDENCE BOULEVARD, SUITE 250, WARREN, NJ 07059
908.668.7777 WHITESTONEASSOC.COM

DRAWING TITLE: **TEST LOCATION PLAN**

CLIENT: **H2M ARCHITECTS & ENGINEERS**

PROJECT: WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 NORTH STREET
WHITE PLAINS, WESTCHESTER COUNTY, NY

PROJECT #: GJ2219662.Y00	
DESIGNED BY: GR	PROJ. MGR.: MK
DATE: 10/28/22	FIGURE: 1
SCALE: 1" = 60'	

WHITESTONE

APPENDIX A
Records of Subsurface Exploration

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/10/2022	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	27.0 feet bgs	**Date Completed:**	10/10/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	9.0 (P) | NS		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	--- | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		2 - 2 - 2 - 2	15	4		GLACIAL DEPOSITS		Light Brown Silty Sand, Moist, Very Loose (SM)	
2 - 4	S-2		3 - 9 - 14 - 21	14	23				As Above, with Gravel, Medium Dense (SM)	
						4.0				
4 - 6	S-3		13 - 14 - 14 - 10	18	28	5.0			As Above (SM)	
6 - 8	S-4		10 - 11 - 11 - 9	18	22				As Above (SM)	
						8.0				
8 - 10	S-5		9 - 8 - 10 - 11	16	18				As Above, Wet (SM)	
						10.0				
10 - 12	S-6		5 - 15 - 16 - 21	18	31				As Above, Grayish-Brown, Dense (SM)	
						15.0				
15 - 15.9	S-7		37 - 50/5"	10	50/5"				As Above, Very Dense (SM)	
						20.0				
20 - 21.4	S-8		34 - 35 - 36 - 50/4"	-	71				As Above, Gray (SM)	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

				Water Depth | Elevation (feet bgs) | (feet)	Cave-In Depth | Elevation (feet bgs) | (feet)
Surface Elevation:	± NS feet	**Date Started:**	10/10/2022		
Termination Depth:	27.0 feet bgs	**Date Completed:**	10/10/2022		
Proposed Location:	Building	**Logged By:**	MO	**During:** 9.0 (P) | NS	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** --- | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0				
25 - 25.4	S-9	X	50/4"	-	50/4"		GLACIAL DEPOSITS		Light Brown Poorly Graded Sand, Wet, Very Dense (SP)	
						27.0				
									Boring Log B-1 Terminated at a Depth of 27.0 Feet Below Ground Surface Due to Auger Refusal	Auger Refusal @ 27.0 fbgs
						30.0				
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/10/2022	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	28.4 feet bgs	**Date Completed:**	10/10/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	10.0 (P) | NS		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	--- | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		1 - 1 - 1 - 2	15	2		GLACIAL DEPOSITS		Brown Silt, Moist, Soft (ML)	Qu = 0.5 tsf
2 - 4	S-2		3 - 2 - 1 - 3	14	3	4.0			As Above, Light Brown (ML)	Qu = 0.5 tsf
4 - 6	S-3		6 - 11 - 13 - 16	17	24	5.0			Brown Silty Sand with Gravel, Moist, Medium Dense (SM)	
6 - 8	S-4		12 - 13 - 17 - 16	18	30				As Above, Dense (SM)	
8 - 10	S-5		11 - 15 - 11 - 13	24	26				As Above, Very Moist, Medium Dense (SM)	
10 - 12	S-6		8 - 10 - 13 - 18	22	23	10.0			As Above, Wet (SM)	
						15.0				
15 - 17	S-7		32 - 37 - 43 - 50	24	60				Gray Poorly Graded Sand with Gravel, Moist, Very Dense (SP)	
						20.0				
20 - 22	S-8		14 - 15 - 21 - 21	16	36				Gray/Brown Silty Sand, Wet, Dense (SM)	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/10/2022		**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	28.4 feet bgs	**Date Completed:**	10/10/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	10.0 (P) | NS		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	--- | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0				
25 - 25.8	S-9	X	27 - 50/3"	3	50/3"		GLACIAL DEPOSITS		Gray Sand with Gravel, Wet, Very Dense (SP)	
28 - 28.4	S-10	X	50/5"	4	50/5"	28.5			Gray Sand with Gravel, Wet, Very Dense (SP)	Auger Refusal @ 28.0 fbgs
									Boring Log B-2 Terminated at a Depth of 28.4 Feet Below Ground Surface Due to Auger and Spoon Refusal	Spoon Refusal @ 28.4 fbgs
						30.0				
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/11/2022	**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**
Termination Depth:	4.0 feet bgs	**Date Completed:**	10/11/2022		
Proposed Location:	Building	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0.5 - 2	S-1		2 - 4 - 7 - 17	14	11		GLACIAL DEPOSITS		Brown Silty Sand with Gravel, Moist, Medium Dense (SM)	
2 - 4	S-2		7 - 11 - 32 - 49	15	43	4.0			As Above, with Gravel (SM)	
						5.0			Boring Log B-3 Terminated at a Depth of 4.0 Feet Below Ground Surface Due to Auger Refusal	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Page 1 of 1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/11/2022	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	12.0 feet bgs	**Date Completed:**	10/11/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	NE | ---		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	NE | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		1 - 1 - 1 - 2	13	2		GLACIAL DEPOSITS		Brown Silty Sand, Moist, Very Loose (SM)	
2 - 4	S-2		3 - 6 - 3 - 11	15	9				As Above, Loose (SM)	
4 - 6	S-3		12 - 11 - 10 - 10	12	21	5.0			As Above, Medium Dense (SM)	
6 - 8	S-4		12 - 10 - 10 - 10	14	20				As Above (SM)	
8 - 10	S-5		9 - 10 - 31 - 22	15	41				As Above, with Gravel, Dense (SM)	
10 - 11.9	S-6		32 - 26 - 16 - 50/5"	15	42	10.0			As Above (SM)	Auger Refusal @ 12.0 fbgs
						12.0			Boring Log B-4 Terminated at a Depth of 12.0 Feet Below Ground Surface Due to Auger and Spoon Refusal	Spoon Refusal @ 12.0 fbgs
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-5

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

				Water Depth | Elevation (feet bgs) | (feet)	Cave-In Depth | Elevation (feet bgs) | (feet)
Surface Elevation:	± NS feet	**Date Started:**	10/11/2022		
Termination Depth:	6.4 feet bgs	**Date Completed:**	10/11/2022		
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		4 - 5 - 6 - 14	18	11		GLACIAL DEPOSITS		Brown Silty Sand, Moist, Medium Dense (SM)	
2 - 4	S-2		12 - 12 - 11 - 8	16	23	4.0			As Above, with Gravel (SM)	
4 - 6	S-3		12 - 18 - 24 - 50/5"	22	42	5.0			Brown/White Poorly Graded Sand with Gravel, Slightly Moist, Dense (SP)	
6 - 6.4	S-4		50/5"		50/5"	6.0 6.4			White Poorly Graded Gravel with Sand, Moist, Very Dense (GP)	
						10.0			Boring Log B-5 Terminated at a Depth of 6.4 Feet Below Ground Surface Due to Auger and Spoon Refusal	Auger and Spoon Refusal @ 6.5 fbgs
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-6

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/12/2022		**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	4.0 feet bgs	**Date Completed:**	10/12/2022				
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:**	NE | ---		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	NE | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		4 - 6 - 6 - 8	14	12		GLACIAL DEPOSITS		Light Brown Silty Sand with Gravel (rock chips), Moist, Medium Dense (SM)	
2 - 4	S-2		6 - 3 - 5 - 10	16	8	4.0			As Above (SM)	
4 - 4	S-3		50/0"	NR	50/0"	5.0			Boring Log B-6 Terminated at a Depth of 4.0 Feet Below Ground Surface Due to Refusal	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-7

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/12/2022	**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**
Termination Depth:	5.3 feet bgs	**Date Completed:**	10/12/2022		
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		4 - 6 - 8 - 10	16	14		GLACIAL DEPOSITS		Light Brown Silty Sand with Gravel, Moist, Medium Dense (SM)	
2 - 4	S-2		8 - 7 - 8 - 23	17	15				As Above (SM)	
4 - 5.3	S-3		29 - 27 - 50/3"	13	77/9"				As Above, Very Dense (SM)	
						5.3			Boring Log B-7 Terminated at a Depth of 5.3 Feet Below Ground Surface Due to Auger Refusal	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-8

Page 1 of 1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

				Water Depth | Elevation (feet bgs) | (feet)	Cave-In Depth | Elevation (feet bgs) | (feet)
Surface Elevation:	± NS feet	**Date Started:**	10/12/2022		
Termination Depth:	15.0 feet bgs	**Date Completed:**	10/12/2022		
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

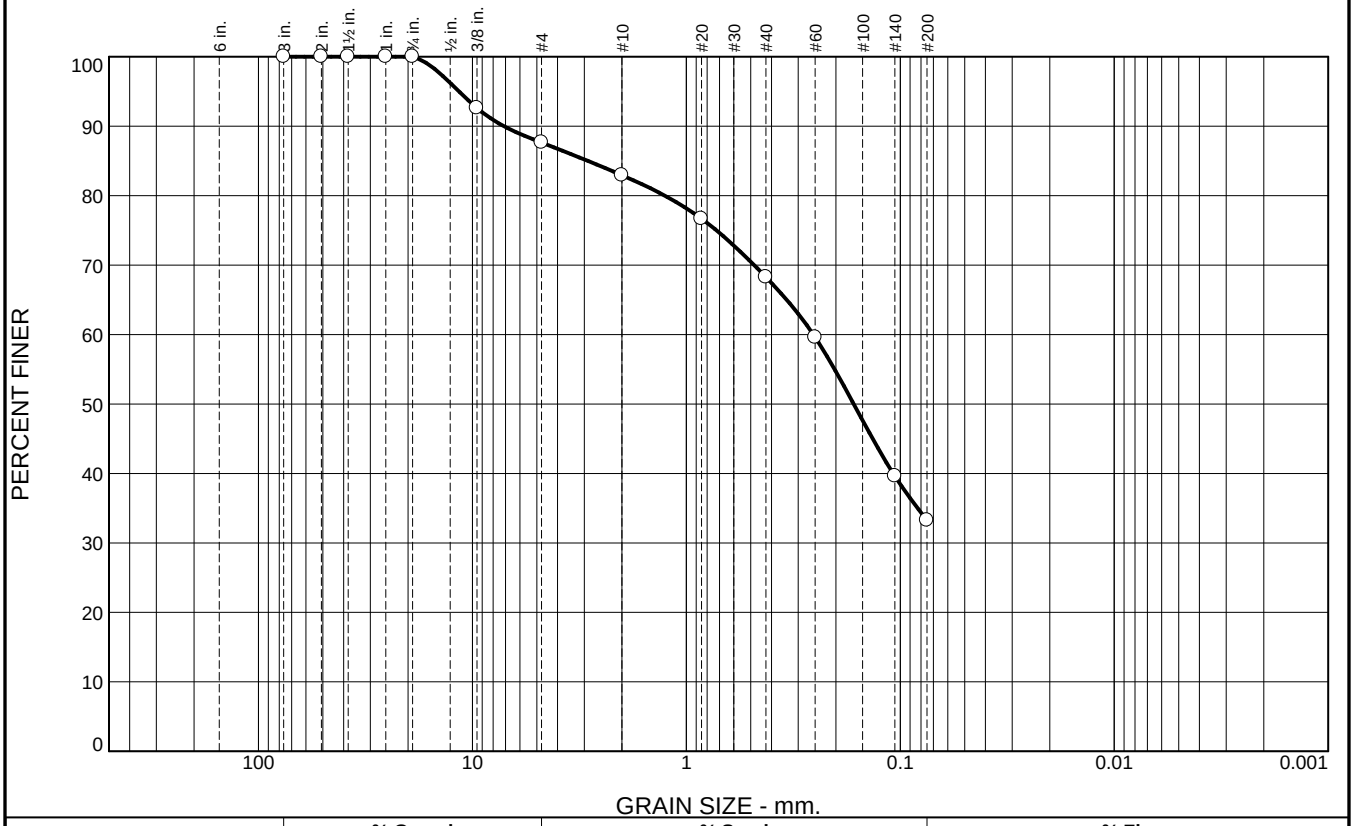
SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		1 - 2 - 3 - 4	16	5		GLACIAL DEPOSITS		Brown Silty Sand, Moist, Loose (SM)	
2 - 4	S-2		8 - 7 - 12 - 16	14	19				As Above, with Gravel, Medium Dense (SM)	
						4.0				
4 - 6	S-3		4 - 3 - 5 - 6	13	8	5.0			Dark Brown Clayey Sand, Moist, Loose (SC)	
6 - 8	S-4		2 - 6 - 5 - 4	15	11				Dark Brown Sandy Silt, Moist, Stiff (ML)	Qu = 1.0 tsf
						8.0				
8 - 10	S-5		6 - 16 - 12 - 14	12	28				As Above with Gravel, Very Still (ML)	Qu = 2.0 tsf
						10.0				
10 - 12	S-6		49 - 9 - 6 - 6	14	14				As Above, Stiff (ML)	Qu = 2.5 tsf
						15.0				
									Boring Log B-7 Terminated at a Depth of 15.0 Feet Below Ground Surface Due to Auger Refusal	Auger Refusal @ 15.0 fbgs (Broke the Split Spoon)
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

APPENDIX B
Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.4	4.7	14.6	35.1	33.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	92.6		
#4	87.6		
#10	82.9		
#20	76.7		
#40	68.3		
#60	59.6		
#140	39.6		
#200	33.2		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 7.1361 D_{85}= 2.8876 D_{60}= 0.2551
D_{50}= 0.1651 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 9.8 %

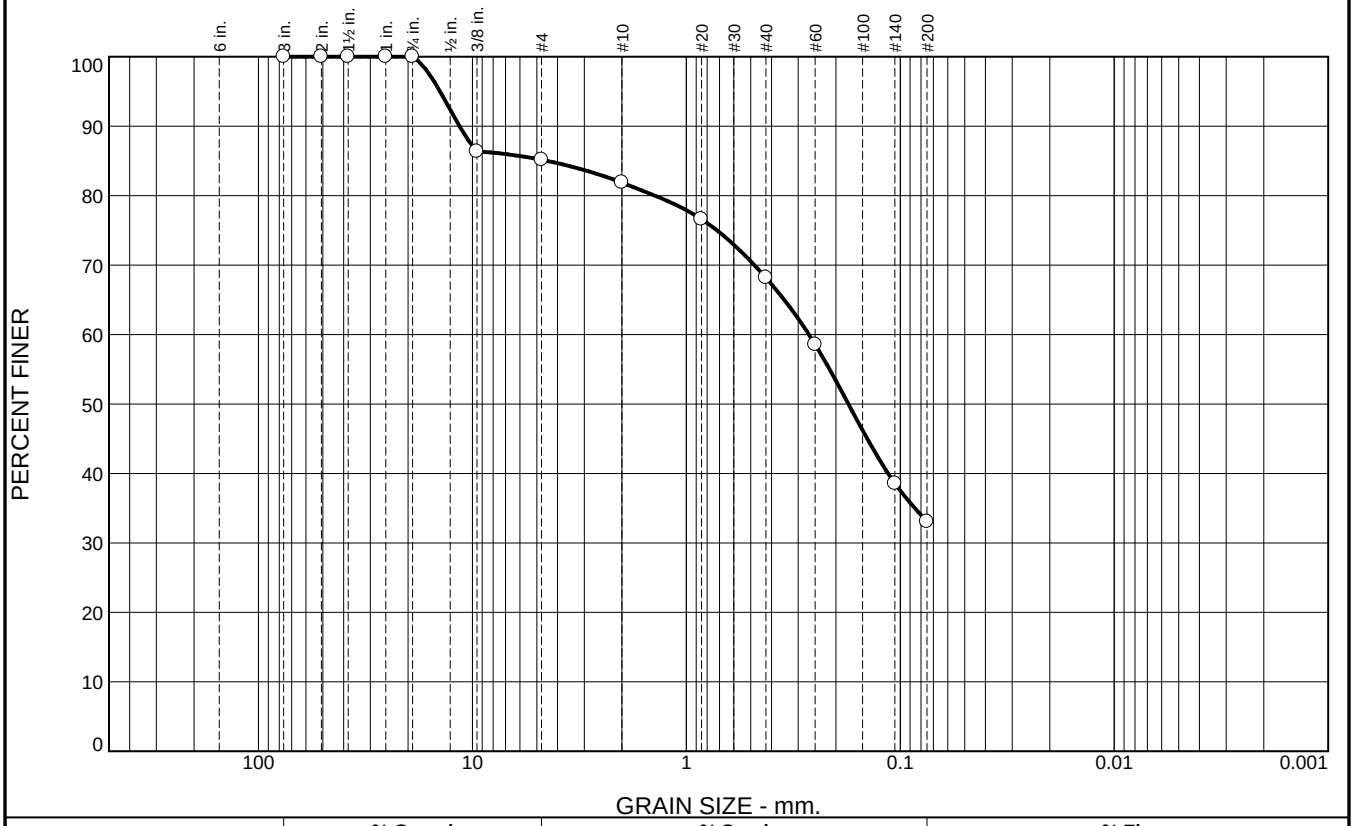
Source of Sample: B-1 **Depth:** 6.0' - 8.0'
Sample Number: S-4

Date: 10/22/2022

WHITESTONE ASSOCIATES, INC.
Warren, New Jersey

Client: H2M Architects & Engineers/White Plains City School District
Project: White Plains High School Improvements
550 North Street, White Plains, Westchester County, NY
Project No: GJ2219662.Y00 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	14.9	3.2	13.7	35.1	33.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	86.4		
#4	85.1		
#10	81.9		
#20	76.6		
#40	68.2		
#60	58.6		
#140	38.6		
#200	33.1		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 11.4889 D_{85}= 4.4892 D_{60}= 0.2675
D_{50}= 0.1748 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 4.7 %

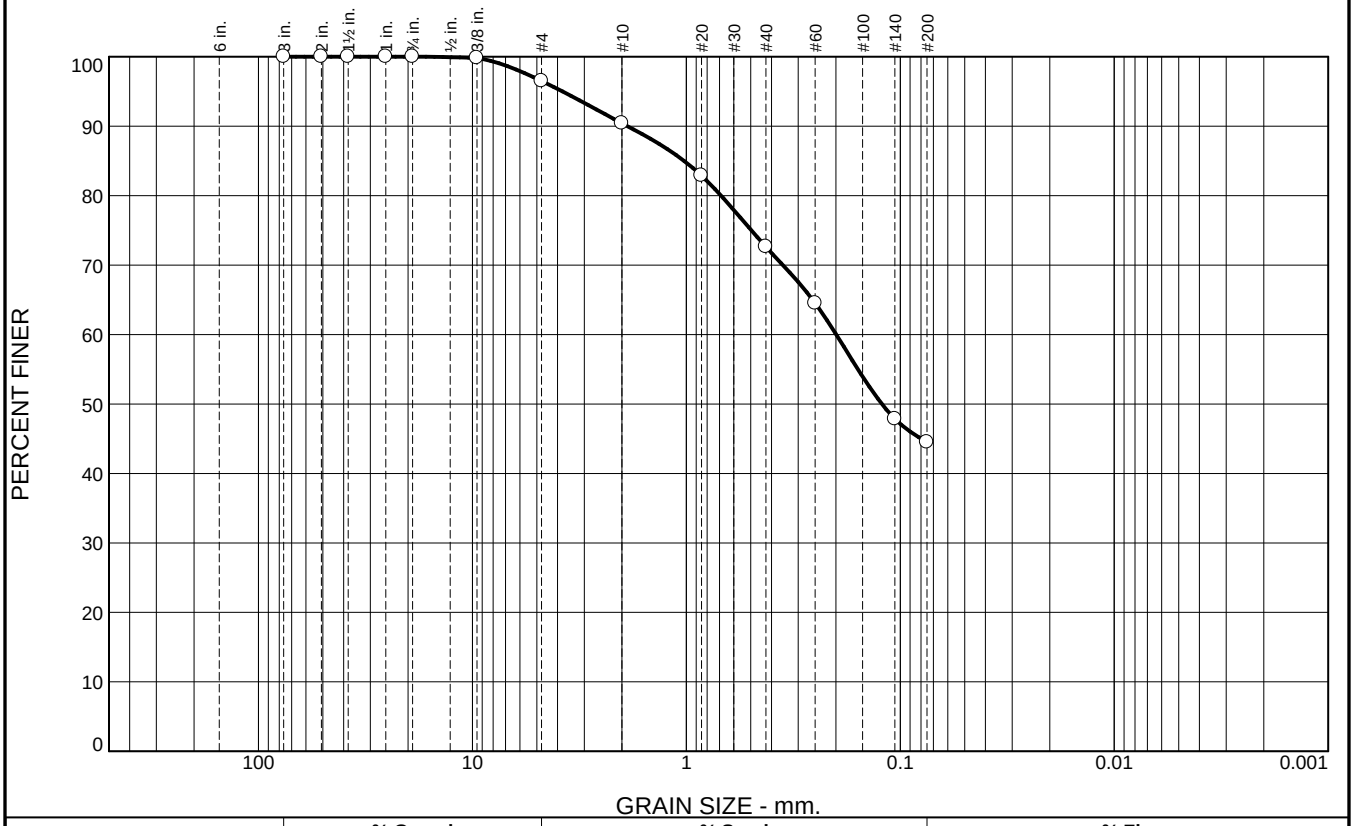
Source of Sample: B-4 **Depth:** 8.0' - 10.0'
Sample Number: S-5

Date: 10/22/2022

WHITESTONE ASSOCIATES, INC.
Warren, New Jersey

Client: H2M Architects & Engineers/White Plains City School District
Project: White Plains High School Improvements
550 North Street, White Plains, Westchester County, NY
Project No: GJ2219662.Y00 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.5	6.1	17.8	28.1	44.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	99.8		
#4	96.5		
#10	90.4		
#20	82.9		
#40	72.6		
#60	64.5		
#140	47.9		
#200	44.5		

* (no specification provided)

Material Description

Clayey Sand

Atterberg Limits

PL= 16 LL= 27 PI= 11

Coefficients

D_{90}= 1.8865 D_{85}= 1.0253 D_{60}= 0.1994
D_{50}= 0.1219 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-6(2)

Remarks

W_n = 6.3 %

Source of Sample: B-8 **Depth:** 4.0' - 6.0'
Sample Number: S-3

Date: 10/22/2022

WHITESTONE ASSOCIATES, INC.
Warren, New Jersey

Client: H2M Architects & Engineers/White Plains City School District
Project: White Plains High School Improvements
550 North Street, White Plains, Westchester County, NY
Project No: GJ2219662.Y00 **Figure**

WHITESTONE

APPENDIX C
Infiltration Test Results

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-1@B-1

Project: White Plains High School Improvements

Date: 10/10/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 8.2

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	10:55	11:55	24.0	8.0	16.0	1.0	---
1	11:55	12:55	24.0	16.0	8.0	1.0	8.0
2	12:55	1:55	24.0	18.0	6.0	1.0	6.0
3	1:55	2:55	24.0	18.0	6.0	1.0	6.0

Remarks: Field *i* = 6.7 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-2@B-2

Project: White Plains High School Improvements

Date: 10/10/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 8.4

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	12:53	1:53	24.0	19.0	5.0	1.0	---
1	1:55	2:55	24.0	20.0	4.0	1.0	4.0
2	2:55	3:55	24.0	20.0	4.0	1.0	4.0

Remarks: Field *i* = 4.0 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-3@B-4

Project: White Plains High School Improvements

Date: 10/11/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 8.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	11:21	12:21	24.0	22.0	2.0	1.0	---
1	12:21	1:21	24.0	24.0	0.0	1.0	< 0.2
2	1:21	2:21	24.0	24.0	0.0	1.0	< 0.2

Remarks: Field *i* = < 0.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-4@B-5

Project: White Plains High School Improvements

Date: 10/11/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 5.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	2:56	3:56	24.0	22.0	2.0	1.0	---
1	3:58	4:58	24.0	23.0	1.0	1.0	1.0

Remarks: Field i = 1.0 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-5@B-6

Project: White Plains High School Improvements

Date: 10/12/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 2.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	9:36	10:36	24.0	23.0	1.0	1.0	---
1	10:36	11:36	24.0	24.0	0.0	1.0	< 0.2
2	11:36	12:36	24.0	24.0	0.0	1.0	< 0.2

Remarks: Field *i* = < 0.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-6@B-7

Project: White Plains High School Improvements

Date: 10/12/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 2.5

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	10:01	11:01	24.0	23.0	1.0	1.0	---
1	11:01	12:01	24.0	23.0	1.0	1.0	1.0
2	12:01	1:01	24.0	23.0	1.0	1.0	1.0

Remarks: Field *i* = 1.0 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-7@B-8

Project: White Plains High School Improvements

Date: 10/12/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 7.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	11:49	12:49	24.0	23.8	0.2	1.0	---
1	12:49	1:49	24.0	23.8	0.2	1.0	0.2

Remarks: Field *i* = 0.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

APPENDIX D
Supplemental Information (USCS, Terms & Symbols)

WHITESTONE

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
whitestoneassoc.com

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT	
TRACE	1% TO 10%
LITTLE	10% TO 20%
SOME	20% TO 35%
AND	35% TO 50%

COMPACTNESS*
Sand and/or Gravel

RELATIVE DENSITY	
LOOSE	0% TO 40%
MEDIUM DENSE	40% TO 70%
DENSE	70% TO 90%
VERY DENSE	90% TO 100%

CONSISTENCY*
Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT	
VERY SOFT	LESS THAN 250
SOFT	250 TO 500
MEDIUM	500 TO 1000
STIFF	1000 TO 2000
VERY STIFF	2000 TO 4000
HARD	GREATER THAN 4000

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.*

L:\Geotechnical Forms and References\Reports\USCSTRMSSYM NJ.docx

WHITESTONE

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
whitestoneassoc.com

GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
Qu: Unconfined compressive strength, TSF.
Qp: Penetrometer value, unconfined compressive strength, TSF.
Mc: Moisture content, %.
LL: Liquid limit, %.
PI: Plasticity index, %.
δd: Natural dry density, PCF.
▼: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

NE: Not Encountered (Groundwater was not encountered).
SS: Split-Spoon - 1 ⅜" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
OB: Diamond Bit.
CB: Carbide Bit
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

Term (Non-Cohesive Soils)	Standard Penetration Resistance
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Term (Cohesive Soils)	Qu (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

Other Office Locations:

CHALFONT, PA 215.712.2700 | SOUTHBOROUGH, MA 508.485.0755 | ROCKY HILL, CT 860.726.7889 | WALL, NJ 732.592.2101 | PHILADELPHIA, PA 215.848.2323 | BEDFORD, NH 603.514.2230 | TAMPA, FL 813.851.0690 | MIAMI, FL 786.783.6966

Environmental & Geotechnical Engineers & Consultants

FINAL REPORT OF ENVIRONMENTAL SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Prepared for:

White Plains City School District
5 Homeside Lane
White Plains, NY 10603

Prepared by:

Louis Berger A WSP Company
565 Taxter Road, 5th Floor
Elmsford, New York 10523
Tel. (914) 798-3710
Fax (914) 592-1734

Project No. 2043479.17
Final Submission Date: October 7, 2019

Louis Berger A WSP Company
565 Taxter Road, 5th Floor, Elmsford, NY 10523
Tel 914 798 3710 Fax 914 592 1734 www.louisberger.com

October 7, 2019

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10603

Subject: Final Report of Environmental Services
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger (LB) A WSP Company has completed a material inspection at the White Plains High School located at 550 North Street, White Plains NY 10605. The inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) and Polychlorinated Biphenyls (PCBs) based on the design drawings dated September 2019 submitted by H2M Architects & Engineers for the proposed "Interior Upgrades & Site Work Project" at the White Plain High School.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

LOUIS BERGER (LB) A WSP COMPANY

Craig Napolitano, CHMM
Vice President, Emergency Management & IH Services

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY

Louis Berger (LB) A WSP Company has performed a material inspection for the presence or absence of Asbestos-Containing Materials (ACM) and Polychlorinated Biphenyls (PCBs) at the White Plains High School located at 550 North Street, White Plains NY 10605. The intent of this inspection was to screen for Asbestos-Containing Materials (ACM) and Polychlorinated Biphenyls (PCBs) that may be impacted during the proposed "Interior Upgrades & Site Work Project" at the White Plains High School based on the design drawings dated September 2019 submitted by H2M Architects & Engineers.

Marvin Luccioni, Josue Garcia & Luis Nevarez of LB performed the inspection on September 17, 2019. Mr. Luccioni (Cert# 03-11021) is certified as a New York State Department of Labor (NYSDOL) Asbestos Inspector. Mr. Garcia (Cert# 01-04292) is certified as a New York State Department of Labor (NYSDOL) Asbestos Inspector. Mr. Nevarez (Cert# 12-12740) is certified as a New York State Department of Labor (NYSDOL) Asbestos Inspector.

The results of the visual inspection and bulk sample analysis determined that the following suspect ACM and PCB materials may be impacted by the proposed interior upgrades:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected by LB on 9/17/19 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected by LB on 5/2/17 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Mudded Elbows associated with Fiberglass Pipe Insulation, Gray (Bldg. C Corridor behind Lockers)**
- **Cementitious Panels, Gray (Custodians Office)**

Analytical results of the bulk samples collected by LB on 3/29-30/17 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldgs. B, C & E Steam Tunnels)**
- **Debris (Mudded Joints) inside Wall Penetrations & Ground (Bldgs. B, C, D & E Steam Tunnels)**

Analytical results of the bulk samples collected by LB on 5/3/16 & 6/8/16 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected by LB on 9/11/13 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **9"x9" Floor Tiles (Throughout Interior)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

The following materials **are assumed to be asbestos**.

- **Braided Electrical Wiring in Electrical Boxes & Conduits**

The following materials **contain asbestos as per 2019 AHERA**.

- **9"x9" Floor Tiles/Mastic (Throughout Interior)**
- **Transite Soffit**

Analytical results of bulk samples collected by LB on 9/17/19 indicate the following materials **do not contain** asbestos (less than 1-percent);

- 12" Elbows associated with Fiberglass Pipe Insulation, Gray (Pool Mechanical Room)
- 6" Elbows associated with Fiberglass Pipe Insulation, Gray (Pool Mechanical Room)
- Boiler Breeching, Tan (Pool Boiler Room)
- Gasket, Red (Pool Boiler Room)
- Store Front Caulking, Gray (Main Vestibule Entrance)
- Terrazzo Flooring (Main Vestibule Entrance)
- Block Wall Mortar, Gray (Main Vestibule Entrance)
- Exterior Base Caulking, Gray (Exterior Main Vestibule Entrance)
- Exterior Brick Mortar, Gray (Exterior Façade)

Analytical results of bulk samples collected by LB on 2/2/18 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Interior Glazed Brick Mortar, Gray (Throughout Interior)
- Joint Compound, White (Throughout Interior)
- Sheetrock, White (Throughout Interior)
- Plaster, Brown Coat

Analytical results of bulk samples collected by LB on 9/11/17 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Interior Brick Mortar, Gray (Throughout Interior)
- Interior Cinderblock Mortar, Gray (Throughout Interior)
- 1'x1' Pinhole Ceiling Tiles, White (Throughout Interior)
- Mastic associated with 1'x1' Pinhole Ceiling Tiles, Brown (Throughout Interior)
- Fittings Insulation associated with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White (Throughout Interior)
- Joint Compound associated with Sheetrock, White (Throughout Interior)
- Caulking at Metal Exhaust Vent Edge, Gray

Analytical results of bulk samples collected by LB on 5/2/17 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Canvas over Fiberglass Pipe Insulation, Gray (Bldg. C Corridor behind Lockers)
- Mastic associated with 4" Brown Cove Base, Brown (Bldg. C Corridor behind Lockers)
- 4" Brown Cove Base (Bldg. C Corridor behind Lockers)
- Particle Board, Brown (Bldg. C above Lockers)

Analytical results of bulk samples collected by LB on 3/29-30/17 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldgs. A Steam Tunnels)
- Debris (Mudded Joints) inside Wall Penetrations & Ground (Bldgs. A Steam Tunnel)
- Vapor Barrier Material on Fiberglass Pipe Insulation, Black (Bldgs. A, B, C, D, E, F Steam Tunnel)
- Cloth Fabric over Fiberglass Pipe Insulation, Beige (Bldgs. A Steam Tunnels)
- Sealant to Fiberglass Pipe Insulation Seams, White (Bldgs. A, B, C, D, E, F Steam Tunnels)
- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldgs. D Steam Tunnel)
- Paper (Pipe) Insulation Debris on Ground, White (Bldgs. E Steam Tunnels)
- Cementitious Material on Ground, Gray (Bldgs. E Steam Tunnels)
- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldg. F Pool Mech Room)
- Vibration Cloth, Black (Bldg. F Pool Mech Room)
- Cloth Fabric to Fiberglass Duct Work Insulation, Beige (Bldg. F Pool Mech Room)

- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Penthouse Mech Room E219A)
- Vapor Barrier Material on Fiberglass Pipe Insulation, Black (Penthouse Mech Room E219A)
- Sealant to Fiberglass Pipe Insulation Seams, White (Penthouse Mech Room E219A)
- Ceiling Plaster, Gray Only (Penthouse Mech Room E219A)
- Cloth Fabric to Fiberglass Duct Work Insulation, Beige (Penthouse Mech Room E219A)
- Gaskets, Green (Penthouse Mech Room E219A)

Analytical results of bulk samples collected by LB on 5/31/16 & 6/8/16 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Exterior Brick Mortar, Gray
- Tectum Ceiling Panels, Gray
- Asphalt, Black
- Interior Cinderblock Mortar, Gray
- Ceiling Scratch Coat, Gray
- Canvas Wrap around Fiberglass Pipe & Fitting Insulation, Gray
- Wall Plaster, White & Brown Coats

Analytical results of bulk samples collected by LB on 9/11/13 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Baseboard Glue, Brown
- Baseboard Molding, Brown
- Mastic associated with 9”x9” Floor Tiles, Black
- 2’x4’ Ceiling Tiles, Gray
- Wall Ceramic Tile Grout, White
- Floor Ceramic Tile Grout, Brown
- Glazing at Entrance Aluminum Framing/Panels, White
- Interior Brick Mortar, Gray
- Interior Cinderblock Mortar, Gray
- 1’x1’ Pinhole Ceiling Tiles, White
- Mastic associated with 1’x1’ Pinhole Ceiling Tiles, Brown
- Glazing at Celestory Glass Panel between Rooms & Hallways, Gray
- Fitting Insulation associated with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock Walls/Ceilings, White
- Joint Compound associated with Sheetrock Walls, White

- Caulking at Metal Exhaust Vent Edges, Gray

The following materials **did not contain asbestos as per 2019 AHERA**.

- 1'x1' Pinhole Pattern Ceiling Tiles, White
- 2'x4' Pinhole Ceiling Tiles, White
- 1'x1' Gouged Ceiling Tiles, White
- 2'x4' Small Pinhole Ceiling Tiles, White
- 1'x1' Fissure Ceiling Tiles, White
- 2'x4' (2'x2' Design) Ceiling Tiles, White
- 2'x2' Small Pinhole Ceiling Tiles, White
- Interior Brick Mortar, Gray
- Interior Cinderblock Mortar, Gray
- Mastic associated with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings associated with Fiberglass Pipe Insulation, Brown
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound associated with Sheetrock, White

The following materials **are non-suspect materials**.

- PVC Elbows associated with Fiberglass Pipe Insulation

B. PCB-CONTAINING MATERIAL

Analytical results of the bulk samples collected indicate that the following materials **contain PCB** (greater than 50 PPM).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain PCB** (less than 50 PPM);

- Store Front Caulking, Gray (Main Vestibule Entrance)

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 528 Mineola Ave., Carle Place NY 11514. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-10)
- New York State Environmental Laboratory Approval Program (Lab No. 11469)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102344)

POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761), the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605), New York State Department of Environmental Conservation 6NYCRR 370-376 and federal Occupational Safety and Health Administration (OSHA) 29CFR 1926 & 1910. These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for ACM and PCB materials that may be impacted by the proposed interior upgrades at the White Plains High School. Locations surveyed include:

- Throughout Interior

A. ASBESTOS-CONTAINING MATERIAL

Materials examined during the Berger inspection included:

- 12" Elbows associated with Fiberglass Pipe Insulation, Gray (Pool Mechanical Room)
- 6" Elbows associated with Fiberglass Pipe Insulation, Gray (Pool Mechanical Room)
- Boiler Breeching, Tan (Pool Boiler Room)
- Gasket, Red (Pool Boiler Room)
- Store Front Caulking, Gray (Main Vestibule Entrance)
- Terrazzo Flooring (Main Vestibule Entrance)
- Block Wall Mortar, Gray (Main Vestibule Entrance)
- Exterior Base Caulking, Gray (Exterior Main Vestibule Entrance)
- Exterior Brick Mortar, Gray (Exterior Façade)

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected by LB on 9/17/19 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected by LB on 5/2/17 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Mudded Elbows associated with Fiberglass Pipe Insulation, Gray (Bldg. C Corridor behind Lockers)**
- **Cementitious Panels, Gray (Custodians Office)**

Analytical results of the bulk samples collected by LB on 3/29-30/17 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldgs. B, C & E Steam Tunnels)**
- **Debris (Mudded Joints) inside Wall Penetrations & Ground (Bldgs. B, C, D & E Steam Tunnels)**

Analytical results of the bulk samples collected by LB on 5/3/16 & 6/8/16 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected by LB on 9/11/13 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **9"x9" Floor Tiles (Throughout Interior)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

The following materials **are assumed to be asbestos**.

- **Braided Electrical Wiring in Electrical Boxes & Conduits**

The following materials **contain asbestos as per 2019 AHERA**.

- **9"x9" Floor Tiles/Mastic (Throughout Interior)**
- **Transite Soffit**

Analytical results of bulk samples collected by LB on 9/17/19 indicate the following materials **do not contain** asbestos (less than 1-percent);

- 12" Elbows associated with Fiberglass Pipe Insulation, Gray (Pool Mechanical Room)
- 6" Elbows associated with Fiberglass Pipe Insulation, Gray (Pool Mechanical Room)
- Boiler Breeching, Tan (Pool Boiler Room)
- Gasket, Red (Pool Boiler Room)
- Store Front Caulking, Gray (Main Vestibule Entrance)
- Terrazzo Flooring (Main Vestibule Entrance)
- Block Wall Mortar, Gray (Main Vestibule Entrance)
- Exterior Base Caulking, Gray (Exterior Main Vestibule Entrance)
- Exterior Brick Mortar, Gray (Exterior Façade)

Analytical results of bulk samples collected by LB on 2/2/18 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Interior Glazed Brick Mortar, Gray (Throughout Interior)
- Joint Compound, White (Throughout Interior)
- Sheetrock, White (Throughout Interior)
- Plaster, Brown Coat

Analytical results of bulk samples collected by LB on 9/11/17 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Interior Brick Mortar, Gray (Throughout Interior)
- Interior Cinderblock Mortar, Gray (Throughout Interior)
- 1'x1' Pinhole Ceiling Tiles, White (Throughout Interior)
- Mastic associated with 1'x1' Pinhole Ceiling Tiles, Brown (Throughout Interior)
- Fittings Insulation associated with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White (Throughout Interior)
- Joint Compound associated with Sheetrock, White (Throughout Interior)
- Caulking at Metal Exhaust Vent Edge, Gray

Analytical results of bulk samples collected by LB on 5/2/17 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Canvas over Fiberglass Pipe Insulation, Gray (Bldg. C Corridor behind Lockers)
- Mastic associated with 4" Brown Cove Base, Brown (Bldg. C Corridor behind Lockers)
- 4" Brown Cove Base (Bldg. C Corridor behind Lockers)
- Particle Board, Brown (Bldg. C above Lockers)

Analytical results of bulk samples collected by LB on 3/29-30/17 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldgs. A Steam Tunnels)
- Debris (Mudded Joints) inside Wall Penetrations & Ground (Bldgs. A Steam Tunnel)
- Vapor Barrier Material on Fiberglass Pipe Insulation, Black (Bldgs. A, B, C, D, E, F Steam Tunnel)
- Cloth Fabric over Fiberglass Pipe Insulation, Beige (Bldgs. A Steam Tunnels)
- Sealant to Fiberglass Pipe Insulation Seams, White (Bldgs. A, B, C, D, E, F Steam Tunnels)
- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldgs. D Steam Tunnel)
- Paper (Pipe) Insulation Debris on Ground, White (Bldgs. E Steam Tunnels)
- Cementitious Material on Ground, Gray (Bldgs. E Steam Tunnels)
- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Bldg. F Pool Mech Room)
- Vibration Cloth, Black (Bldg. F Pool Mech Room)
- Cloth Fabric to Fiberglass Duct Work Insulation, Beige (Bldg. F Pool Mech Room)
- Mudded Joints associated with Fiberglass Pipe Insulation, Gray (Penthouse Mech Room E219A)

- Vapor Barrier Material on Fiberglass Pipe Insulation, Black (Penthouse Mech Room E219A)
- Sealant to Fiberglass Pipe Insulation Seams, White (Penthouse Mech Room E219A)
- Ceiling Plaster, Gray Only (Penthouse Mech Room E219A)
- Cloth Fabric to Fiberglass Duct Work Insulation, Beige (Penthouse Mech Room E219A)
- Gaskets, Green (Penthouse Mech Room E219A)

Analytical results of bulk samples collected by LB on 5/31/16 & 6/8/16 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Exterior Brick Mortar, Gray
- Tectum Ceiling Panels, Gray
- Asphalt, Black
- Interior Cinderblock Mortar, Gray
- Ceiling Scratch Coat, Gray
- Canvas Wrap around Fiberglass Pipe & Fitting Insulation, Gray
- Wall Plaster, White & Brown Coats

Analytical results of bulk samples collected by LB on 9/11/13 indicate the following materials **do not contain** asbestos (less than 1-percent);

- Baseboard Glue, Brown
- Baseboard Molding, Brown
- Mastic associated with 9”x9” Floor Tiles, Black
- 2’x4’ Ceiling Tiles, Gray
- Wall Ceramic Tile Grout, White
- Floor Ceramic Tile Grout, Brown
- Glazing at Entrance Aluminum Framing/Panels, White
- Interior Brick Mortar, Gray
- Interior Cinderblock Mortar, Gray
- 1’x1’ Pinhole Ceiling Tiles, White
- Mastic associated with 1’x1’ Pinhole Ceiling Tiles, Brown
- Glazing at Celestory Glass Panel between Rooms & Hallways, Gray
- Fitting Insulation associated with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock Walls/Ceilings, White
- Joint Compound associated with Sheetrock Walls, White
- Caulking at Metal Exhaust Vent Edges, Gray

The following materials **did not contain asbestos as per 2019 AHERA**.

- 1'x1' Pinhole Pattern Ceiling Tiles, White
- 2'x4' Pinhole Ceiling Tiles, White
- 1'x1' Gouged Ceiling Tiles, White
- 2'x4' Small Pinhole Ceiling Tiles, White
- 1'x1' Fissure Ceiling Tiles, White
- 2'x4' (2'x2' Design) Ceiling Tiles, White
- 2'x2' Small Pinhole Ceiling Tiles, White
- Interior Brick Mortar, Gray
- Interior Cinderblock Mortar, Gray
- Mastic associated with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings associated with Fiberglass Pipe Insulation, Brown
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound associated with Sheetrock, White

B. PCB-CONTAINING MATERIAL

Analytical results of the bulk samples collected indicate that the following materials **contain PCB** (greater than 50 PPM).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain PCB** (less than 50 PPM);

- Store Front Caulking, Gray (Main Vestibule Entrance)

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the proposed interior upgrades at the White Plains High School. The following suspect materials were sampled and analyzed for asbestos content by Berger:

4.1 Table 4.1 – Suspect Materials Inspected

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
1	Pool Mech Room	12" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD
2	Pool Mech Room	6" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD
3	Pool Boiler Room	Boiler Breeching, Tan	NAD
4	Pool Boiler Room	Boiler Hatch Sealant, Red	NAD
5	Pool Boiler Room	Gasket, Red	NAD
6	Main Vestibule Entrance	Store Front Caulking, Gray	NAD
7	Main Vestibule Entrance	Terrazzo Flooring, White	NAD
8	Main Vestibule Entrance	Block Wall Mortar, Gray	NAD
9	Exterior Main Vestibule Entrance	Exterior Base Caulking, Gray	NAD
10	Exterior Facade	Exterior Brick Mortar, Gray	NAD

Bold = Positive for ACM NAD = No Asbestos Detected

4.2 CONDITION AND FRIABLITY ASSESSMENT TABLE

For each inspection conducted, the inspector classifies ACM or Assumed ACM materials by friability and condition. This helps to determine the extent of damage in certain areas as well as the potential for further damage and Asbestos release due to disturbance of the material.

Table 4.2 – Condition and Friability Assessment

Location	Material	Quantity	Friability	Condition
Throughout Interior	**Electrical Braided Wiring in Electrical Boxes & Conduits**	**588 LF**	**Friable**	**Good**

Note 1: If the scope of work dictates penetrations through floors which has ACM floor tiles and mastic a certified abatement contractor will need to perform the penetrations.
Note 2: The quantities are an estimate and should be confirmed during the contractor walkthrough.

Condition Definitions:
Good: None/Minimal apparent damage to ACM
Fair: Up to 10% localized damage or up to 25% of the entire ACM is damaged
Poor: Over 10% localized damage or over 25% of the entire ACM is damaged

4.3 SAMPLE ANALYSIS TABLE

Laboratory analysis results, in tabular form, are included in Appendix A.

5.0 AREAS NOT ACCESSIBLE

During the inspection the following areas were not accessible:

Spaces within Walls/Floors/Ceilings: No destructive sampling was performed on concealed spaces in walls to access plenum, chases etc. It should be assumed that asbestos containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Assumed ACM materials have been identified in this inspection that may be impacted as part of the Interior upgrades at the White Plains High School.

The ACM and PCB inspection was conducted at the request of the White Plains City School District based on the design drawings dated September 2019 submitted by H2M Architects & Engineers for the proposed interior upgrades at the White Plains High School. Any change in the scope of work will require further investigation to accurately classify any additional ACM and PCB resulting from the modified or updated scope of work.

7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of LB's efforts for the environmental inspection work for the White Plains High School.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of LB's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which LB is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon LB's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:	Reviewed by:
Marvin Luccioni	Craig Napolitano, CHMM
NYS DOL Inspector	Vice President, Emergency Management & IH Services

APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS NY 10605

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
01	01	Pool Mechanical Room	12" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD	---
01	02	Pool Mechanical Room	12" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD	---
01	03	Pool Mechanical Room	12" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD	---
02	04	Pool Mechanical Room	6" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD	---
02	05	Pool Mechanical Room	6" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD	---
02	06	Pool Mechanical Room	6" Elbows associated with Fiberglass Pipe Insulation, Gray	NAD	---
03	07	Pool Boiler Room	Boiler Breeching, Tan	NAD	---
03	08	Pool Boiler Room	Boiler Breeching, Tan	NAD	---
03	09	Pool Boiler Room	Boiler Breeching, Tan	NAD	---
04	10	Pool Boiler Room	Boiler Hatch Sealant, Red	NAD	NAD
04	11	Pool Boiler Room	Boiler Hatch Sealant, Red	NAD	NAD
05	12	Pool Boiler Room	Gasket, Red	NAD	NAD
05	13	Pool Boiler Room	Gasket, Red	NAD	NAD
06	14	Main Vestibule Entrance	Store Front Caulking, Gray	NAD	NAD
06	15	Main Vestibule Entrance	Store Front Caulking, Gray	NAD	NAD
07	16	Main Vestibule Entrance	Terrazzo Flooring, White	NAD	---

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
07	17	Main Vestibule Entrance	Terrazzo Flooring, White	NAD	---
08	18	Main Vestibule Entrance	Block Wall Mortar, Gray	NAD	---
08	19	Main Vestibule Entrance	Block Wall Mortar, Gray	NAD	---
09	20	Exterior Main Vestibule Entrance	Exterior Base Caulking, Gray	NAD	NAD
09	21	Exterior Main Vestibule Entrance	Exterior Base Caulking, Gray	NAD	NAD
10	22	Exterior Facade	Exterior Brick Mortar, Gray	NAD	---
10	23	Exterior Facade	Exterior Brick Mortar, Gray	NAD	---

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

APPENDIX B:
ASBESTOS BULK SAMPLE FIELD DATA SHEETS WITH CHAIN OF CUSTODY AND LABORATORY RESULTS

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061921672
Customer ID: LBAP78
Customer PO: 2043479.17
Project ID:

Attention: Marvin Luccioni
Louis Berger U.S., Inc
96 Morton Street
8th floor
New York, NY 10014

Phone: (718) 730-2741
Fax:
Received Date: 09/18/2019 4:28 PM
Analysis Date: 09/20/2019 - 09/21/2019
Collected Date: 09/17/2019

Project: W.P.H.S. at 550 North St., W.P., NY, Interior & Exterior, Renovation, 2043479.17

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 01-01 *061921672-0001*		**Description** Pool Mech. Room - 12" Elbows assoc. w./ Fiberglass Pipe Insul., Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ Tan/ White	15.00% Cellulose 30.00% Min. Wool	40.00% Ca Carbonate 15.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 01-02 *061921672-0002*		**Description** Pool Mech. Room - 12" Elbows assoc. w./ Fiberglass Pipe Insul., Gray **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ Tan/ White	12.00% Cellulose 25.00% Min. Wool	35.00% Ca Carbonate 28.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 01-03 *061921672-0003*		**Description** Pool Mech. Room - 12" Elbows assoc. w./ Fiberglass Pipe Insul., Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/21/2019	Gray/ Tan	20.00% Min. Wool	40.00% Ca Carbonate 40.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 02-04 *061921672-0004*		**Description** Pool Mech. Room - 6" Elbows assoc. w./ Fiberglass Pipe Insul., Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ Tan/ White	3.00% Cellulose 35.00% Min. Wool	35.00% Ca Carbonate 27.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 02-05 *061921672-0005*		**Description** Pool Mech. Room - 6" Elbows assoc. w./ Fiberglass Pipe Insul., Gray **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ Tan/ White	7.00% Cellulose 25.00% Min. Wool	30.00% Ca Carbonate 38.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial report from: 09/21/2019 17:00:37

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order:	061921672
Customer ID:	LBAP78
Customer PO:	2043479.17
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 02-06 *061921672-0006*		**Description** Pool Mech. Room - 6" Elbows assoc. w./ Fiberglass Pipe Insul., Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/21/2019	Gray/ Tan	5.00% Cellulose 15.00% Min. Wool	30.00% Ca Carbonate 50.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 03-07 *061921672-0007*		**Description** Pool Mech. Room - Boiler Breeching, Tan **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	White/ Yellow	20.00% Cellulose	60.00% Matrix 20.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 03-08 *061921672-0008*		**Description** Pool Mech. Room - Boiler Breeching, Tan **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	White/ Yellow	25.00% Cellulose	55.00% Matrix 20.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 03-09 *061921672-0009*		**Description** Pool Mech. Room - Boiler Breeching, Tan **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/21/2019	Tan	15.00% Cellulose	50.00% Ca Carbonate 35.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 04-10 *061921672-0010*		**Description** Pool Mech. Room - Boiler Hatch Sealant, Red **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Red	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Red		100.00% Other	**None Detected**
Sample ID 04-11 *061921672-0011*		**Description** Pool Mech. Room - Boiler Hatch Sealant, Red **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Red	1.60% Glass	98.40% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Red		100.00% Other	**None Detected**

Initial report from: 09/21/2019 17:00:37

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order:	061921672
Customer ID:	LBAP78
Customer PO:	2043479.17
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 05-12 *061921672-0012*		**Description** Pool Mech. Room - Gasket, Red **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Red		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Red		100.00% Other	**None Detected**
Sample ID 05-13 *061921672-0013*		**Description** Pool Mech. Room - Gasket, Red **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Red		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Red		100.00% Other	**None Detected**
Sample ID 06-14 *061921672-0014*		**Description** Main Entrance - Storefront Caulking, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Gray		100.00% Other	**None Detected**
Sample ID 06-15 *061921672-0015*		**Description** Main Entrance - Storefront Caulking, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Gray		100.00% Other	**None Detected**
Sample ID 07-16 *061921672-0016*		**Description** Main Entrance - Terrazzo, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ White/ Red	3.00% Cellulose	60.00% Ca Carbonate 17.00% Non-fibrous (other) 20.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 07-17 *061921672-0017*		**Description** Main Entrance - Terrazzo, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ White/ Red	2.00% Cellulose	65.00% Ca Carbonate 18.00% Non-fibrous (other) 15.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial report from: 09/21/2019 17:00:37

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061921672
Customer ID: LBAP78
Customer PO: 2043479.17
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 08-18 *061921672-0018*		**Description** Main Entrance - Block Mortar, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ Tan/ White	5.00% Cellulose	35.00% Ca Carbonate 60.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 08-19 *061921672-0019*		**Description** Main Entrance - Block Mortar, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/21/2019	Gray/ Tan	5.00% Cellulose	15.00% Ca Carbonate 50.00% Non-fibrous (other) 30.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 09-20 *061921672-0020*		**Description** Main Entrance - Base Caulking, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Gray		100.00% Other	**None Detected**
Sample ID 09-21 *061921672-0021*		**Description** Main Entrance - Base Caulking, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2019	Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2019	Gray		100.00% Other	**None Detected**
Sample ID 10-22 *061921672-0022*		**Description** Main Entrance - Exterior Brick Mortar, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/20/2019	Gray/ Tan		30.00% Ca Carbonate 5.00% Non-fibrous (other) 65.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 10-23 *061921672-0023*		**Description** Main Entrance - Exterior Brick Mortar, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/21/2019	Gray/ Tan	3.00% Cellulose	20.00% Ca Carbonate 27.00% Non-fibrous (other) 50.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial report from: 09/21/2019 17:00:37

EMSL Analytical, Inc.
528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order:	061921672
Customer ID:	LBAP78
Customer PO:	2043479.17
Project ID:	

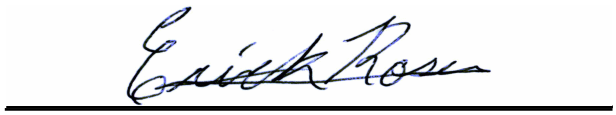
Test Report:Asbestos Analysis of Bulk Material

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods. The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

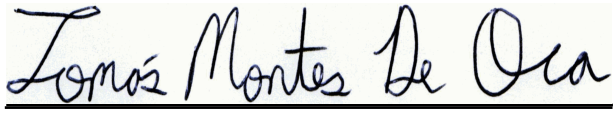
Sample Receipt Date:	9/18/2019	Sample Receipt Time:	4:28 PM
Analysis Completed Date:	9/20/2019	Analysis Completed Time:	6:34 PM

Analyst(s):

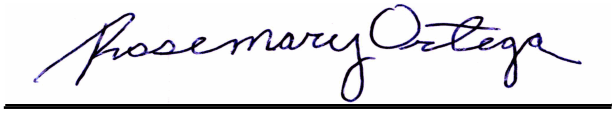


Erick Rosa PLM NYS 198.1 Friable (5)

Tomas Montes De Oca PLM NYS 198.1 Friable (10)



Tomas Montes De Oca PLM NYS 198.6 NOB (8)



Rosemary Ortega TEM NYS 198.4 NOB (8)

Samples reviewed and approved by:

Daniel Clarke, Asbestos Laboratory Manager
or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non-asbestos containing.
All samples examined for the presence of vermiculite when analyzed via NYS 198.1.
-NYS Guidelines for Vermiculite containing samples are available at http://www.wadsworth.org/labcert/elapcert/forms/VermiculiteInterimGuidance_Rev070913.pdf EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NYS ELAP 11469

Initial report from: 09/21/2019 17:00:37

061921672

LOUIS BERGER — ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PAGE 1 OF 2

LB PROJ 043479.17
CLIENT: W.P.S.D.

PROJECT SITE: W.P.H.S @ 550 NORTH ST., W.B. NY
Project Manager: M. MACCIONI

LOCATION(S) SURVEYED: INTERIOR & EXTERIOR
PROPOSED PROJECT: RENOVATION
DATE(S) OF INSPECTION: 09/17/19
Inspector(s) M. MACCIONI, J. GARCIA & L. NEVAREZ

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 98 Morton Street, 8 Floor, New York, NY 10014

RESULTS TO: MMACCIONI@LOUISBERGER.COM

TURNAROUND TIME: ☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
01	01	12" ELBOWS ASSOC. W/ FIBERGLASS PIPE INS., GRAY	POOL MECH ROOM		
↓	02	↓	↓		
↓	03	↓	↓		
02	04	6" ELBOWS ASSOC. W/ FIBERGLASS PIPE INS, GRAY			
↓	05	↓			
↓	06	↓			
03	07	BOILER BREECHINGS, TAN			
↓	08	↓			
↓	09	↓			
04	10	BOILER HATCH SEALANT, RED			
↓	11	↓			
05	12	GASKET, RED			

EMSL ANALYTICAL, INC. CARLE PLACE, NY
IR SEP 18 PM 4:28

CHAIN OF CUSTODY

Relinquished by: (print) M. MACCIONI	(Sign)	09/18/19	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print) Alyssa McDonald	(Sign) Alyssa McDonald	9/18/19	4:28PM AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by. (print)	(Sign)	/ /	AM/PM

RO T.M. PE

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group. Tomás Montalvo Oca 9/20/19 9/21/19 9/21/19

OrderID: 061921672

Page 1 of 2

061921672

LOUIS BERGER — ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2043479.17
CLIENT: W.P.S.D.

PROJECT SITE: W.P.H.S @ 550 NORTH ST., W.R. NY
Project Manager:

LOCATION(S) SURVEYED: INTERIOR & EXTERIOR
PROPOSED PROJECT: RENOVATION
DATE(S) OF INSPECTION: 09/17/19
Inspector(s) M. UCCIONI, J. GARCIA & L. NEVAREZ

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 98 Morton Street, 8 Floor, New York, NY 10014

RESULTS TO: MUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
05	13	GASKET, RED	POOL MECH ROOM		
06	14	STOREFRONT CAULKING, GRAY	MAIN ENTRANCE		
↓	15	↓	↓		
07	16	TERRAZZO, WHITE			
↓	17	↓			
08	18	BLOCK MORTAR, GRAY			
↓	19	↓			
09	20	BASE CAULKING, GRAY			
↓	21	↓			
10	22	EXTERIOR BRICK MORTAR, GRAY			
↓	23	↓	↓		

RECEIVED ANALYTICAL, INC. CARLE PLACE, NY 19 SEP 18 PM 4:28

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		AM/PM	Relinquished by: (print)	(Sign)		AM/PM	Relinquished by: (print)	(Sign)		AM/PM
M. UCCIONI		09/18/19				/ /				/ /	
Received by: (print)	(Sign)		AM/PM	Received by: (print)	(Sign)		AM/PM	Received by: (print)	(Sign)		AM/PM
Alyssa McDonald		9/18/19	4:28PM			/ /				/ /	

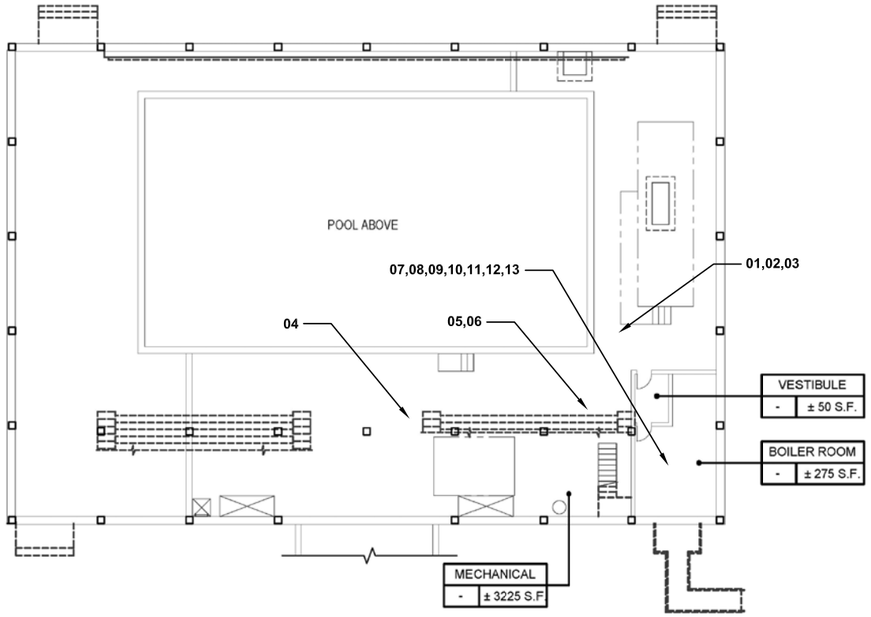
T.N. (RO)

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group. Tomás Montes de Oca 9/20/19 9/21/19

Page 2 of 2

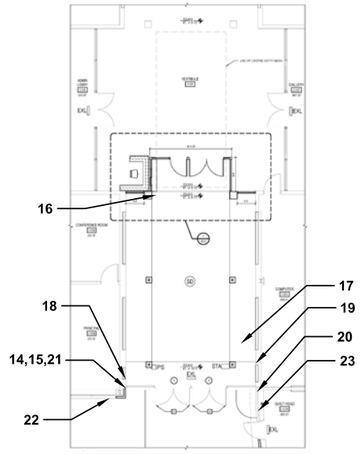
OrderID: 061921672

APPENDIX C:
ASBESTOS BULK SAMPLE LOCATION DRAWINGS



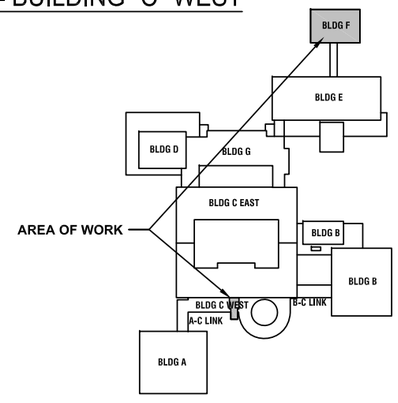
1 BSL001 BASEMENT FLOOR PLAN - BUILDING "F"

SCALE: NOT TO SCALE



2 BSL001 SECURITY VESTIBULE PLAN - BUILDING "C" WEST

SCALE: NOT TO SCALE



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT

wsp

565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

White Plains Public Schools WP REAL LIFE LEARNING

REVISIONS:

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WHITE PLAINS CITY SCHOOL DISTRICT

INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL 580 NORTH STREET WHITE PLAINS, NY 10605

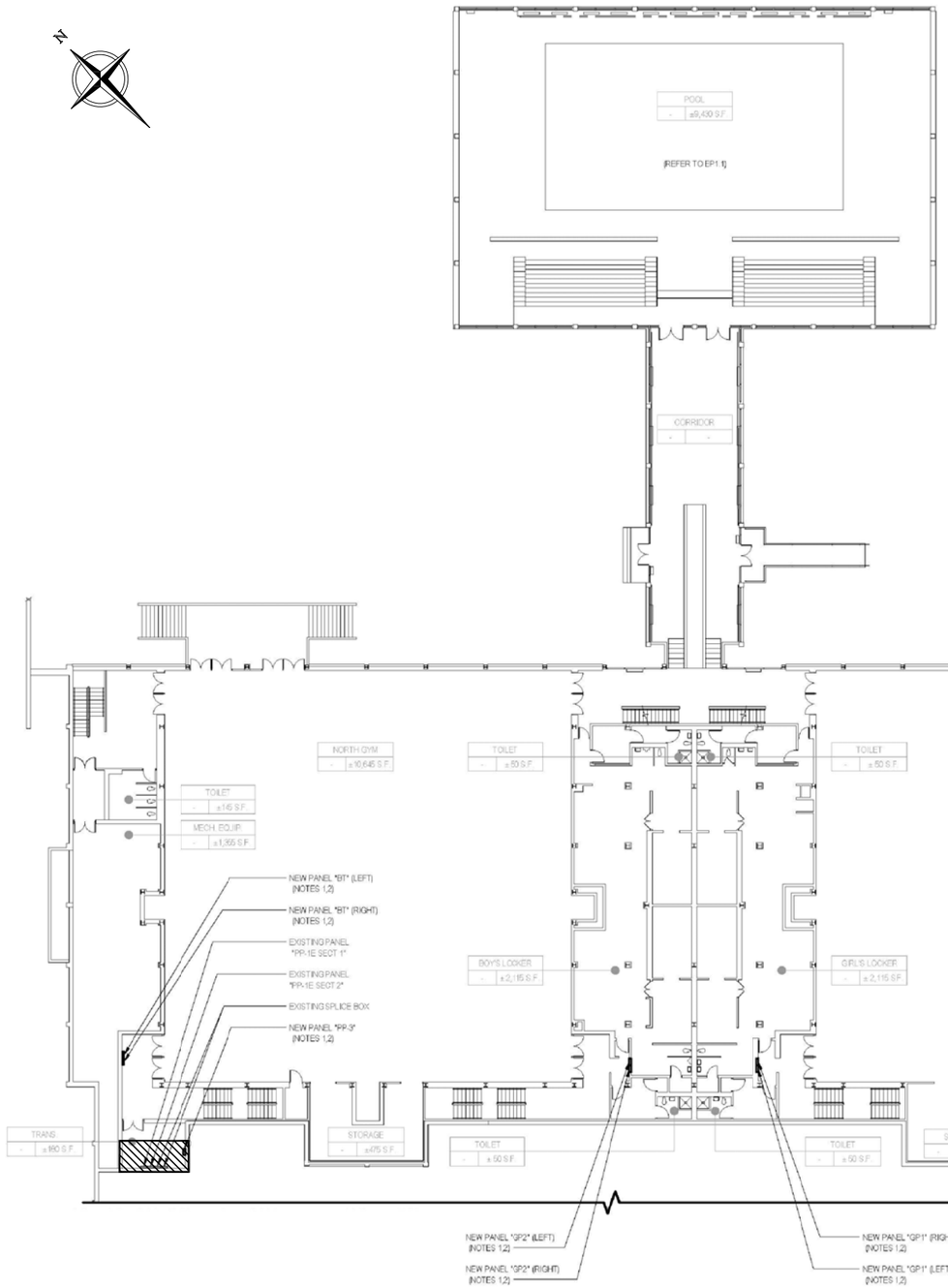
DRAWING TITLE:

BULK SAMPLE LOCATIONS BUILDING "F" BASEMENT FLOOR AND BUILDING "C" SECURITY VESTIBULE PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP./INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL001**
	DRAWING NUMBER: 1 OF 1

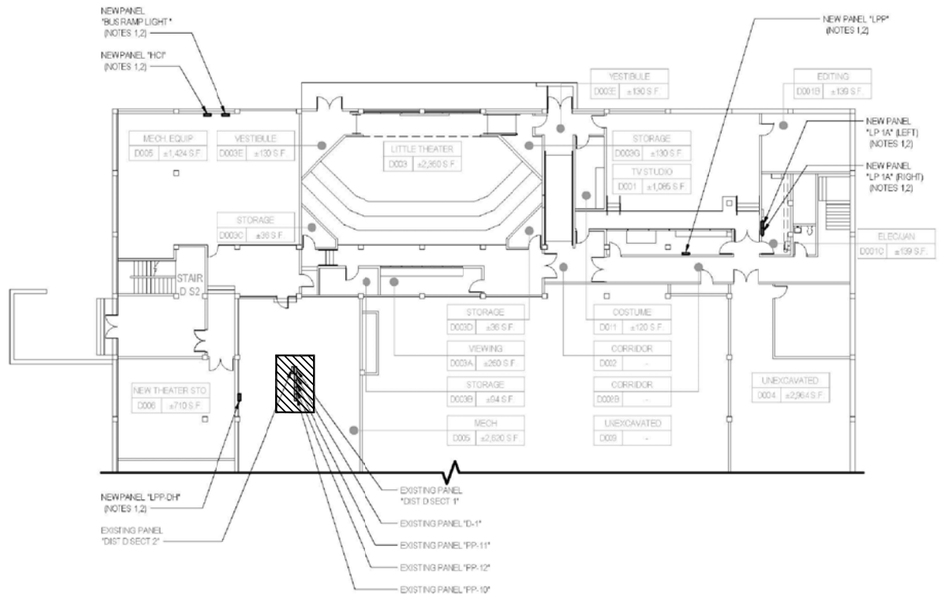
CONSULTANTS PROJECT #: 2043479.17

APPENDIX D:
ASBESTOS CONTAINING MATERIALS LOCATION DRAWINGS



1 ACM001 BUILDING "E" AND "F" - BASEMENT FLOOR PLAN

SCALE: NOT TO SCALE

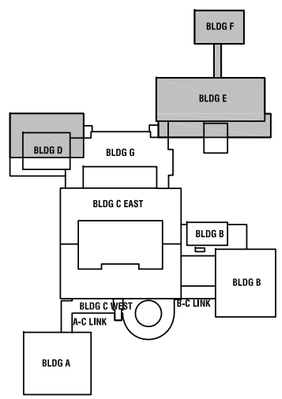


2 ACM001 BUILDING "D" - BASEMENT FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT

wsp

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ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

White Plains Public Schools WP REAL LIFE LEARNING

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WHITE PLAINS CITY SCHOOL DISTRICT

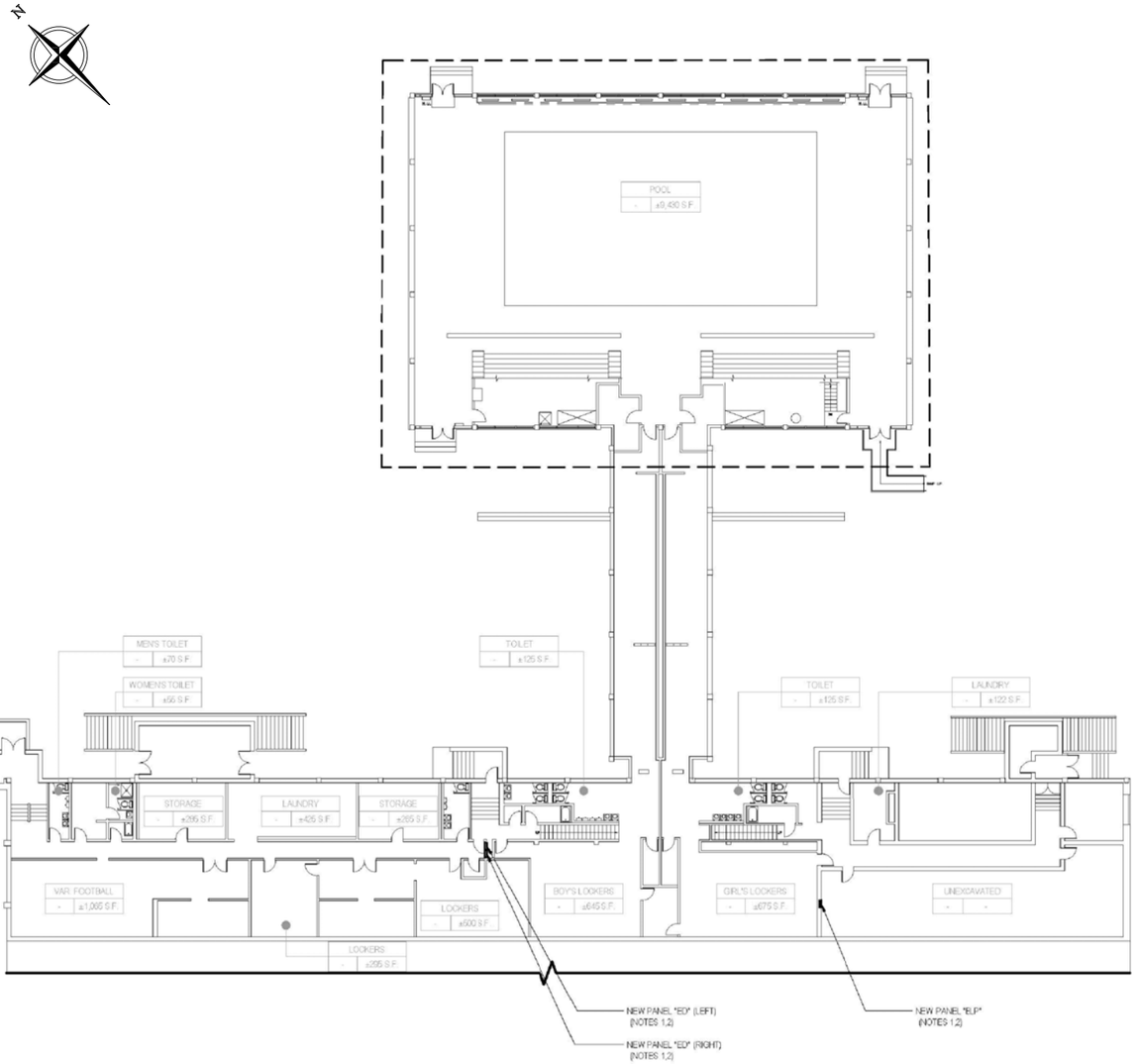
INTERIOR UPGRADES AND SITE WORK
AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "D", "E" AND "F" BASEMENT FLOOR PLAN

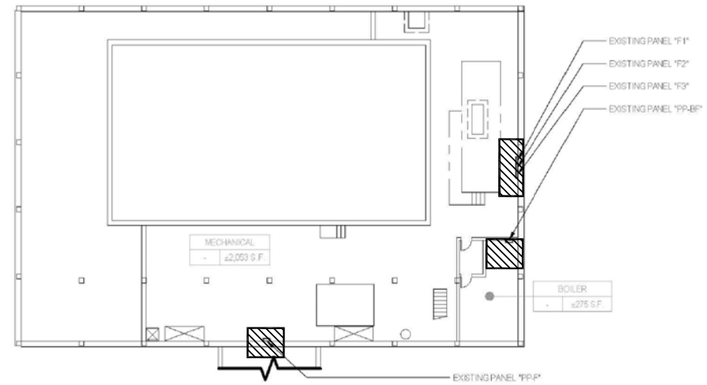
DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM001**
	DRAWING NUMBER: 1 OF 12

CONSULTANTS PROJECT #: 2043479.17



1 ACM002 BUILDING "E" AND "F" - BASEMENT LEVEL 2 PLAN

SCALE: NOT TO SCALE

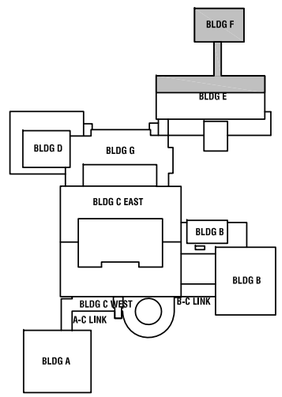


2 ACM002 BUILDING "E" AND "F" - BASEMENT LEVEL 3 PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT

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ELMSFORD, NY 10523
TEL: 914.798.3710 FAX: 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
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WHITE PLAINS CITY SCHOOL DISTRICT

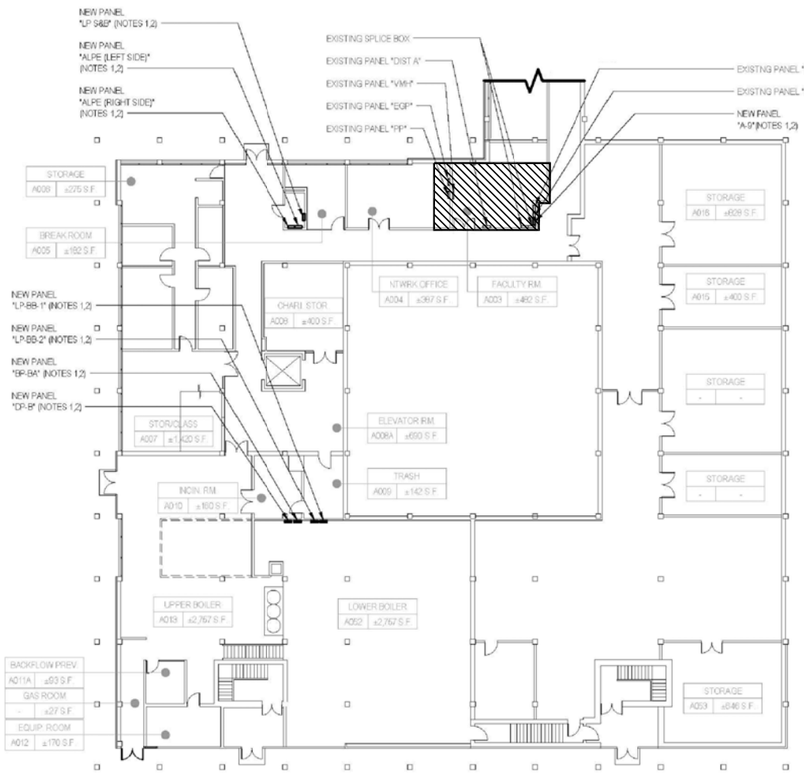
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "E" AND "F" BASEMENT LEVEL 2 AND 3 PLAN

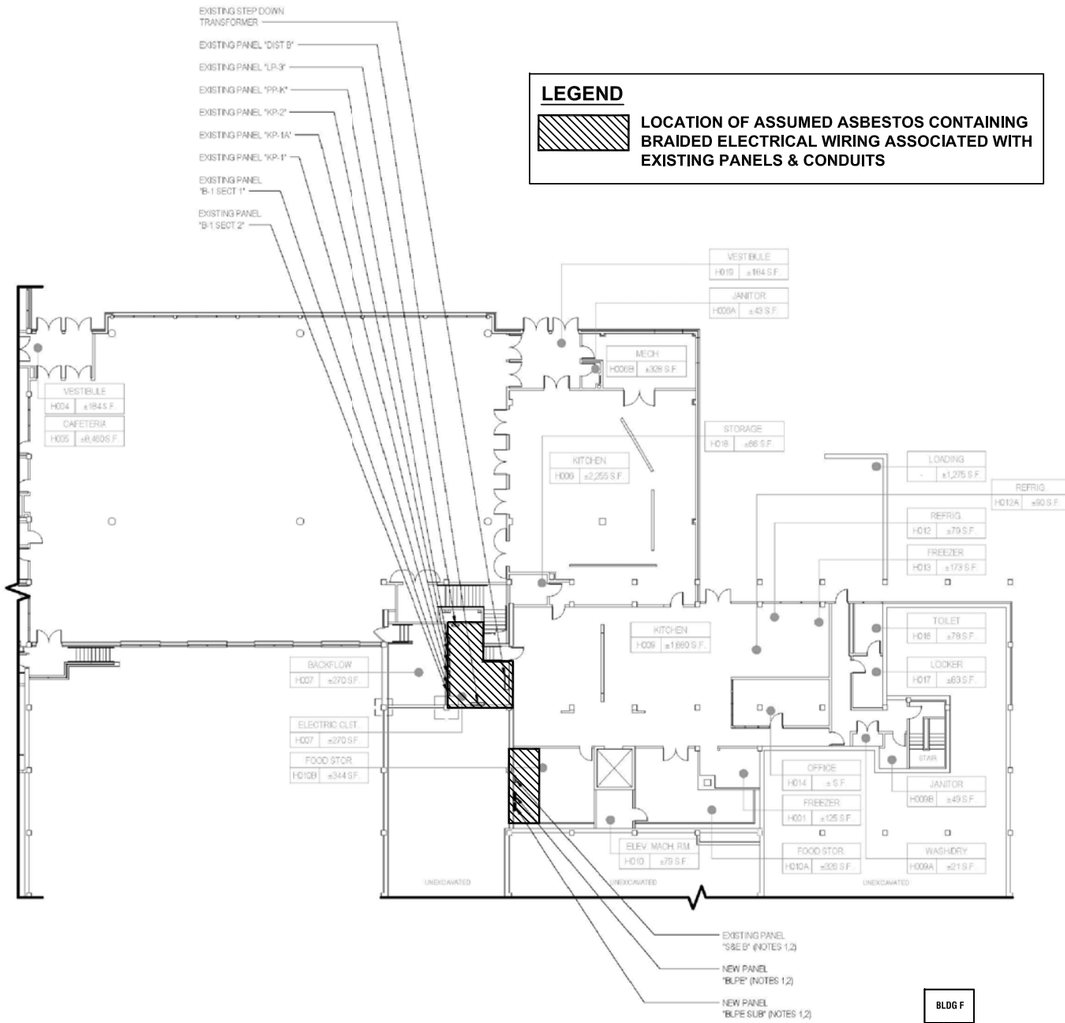
DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM002**
	DRAWING NUMBER: 2 OF 12

CONSULTANTS PROJECT #: 2043479.17



1 ACM003 **BUILDING "A" - GROUND FLOOR PLAN**

SCALE: NOT TO SCALE

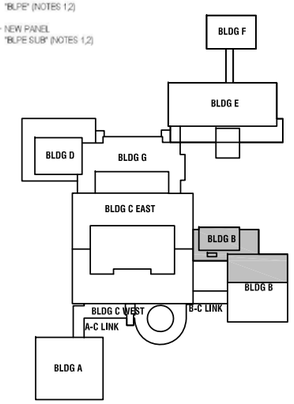


LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS

2 ACM003 **BUILDING "B" - GROUND FLOOR PLAN**

SCALE: NOT TO SCALE



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT
wsp
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
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WHITE PLAINS CITY SCHOOL DISTRICT

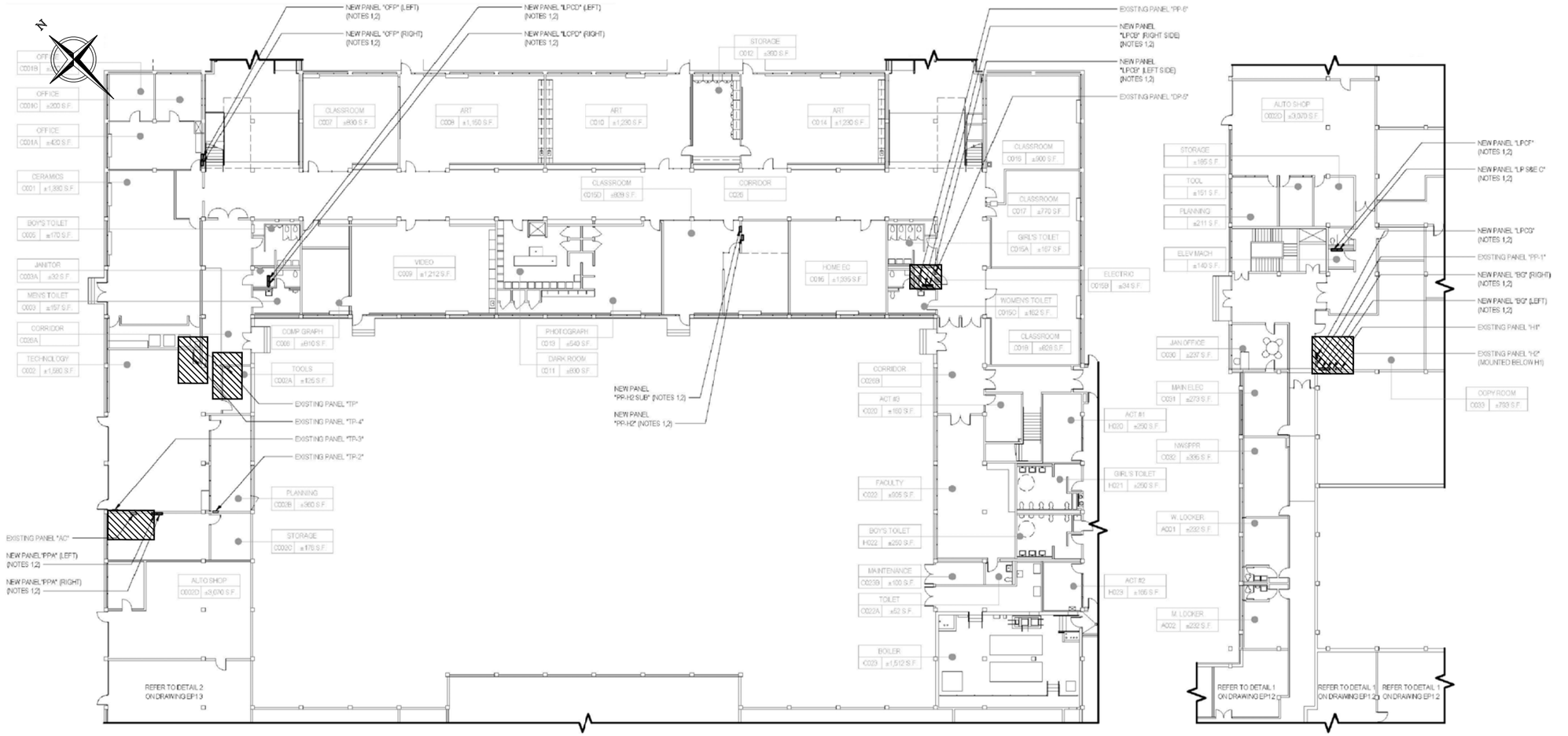
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "A" AND "B" GROUND FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM003**
	DRAWING NUMBER: 3 OF 12

CONSULTANTS PROJECT #: 2043479.17



1 ACM004 **BUILDING "C" EAST - GROUND FLOOR PLAN**

SCALE: NOT TO SCALE

2 ACM004 **BUILDING "C" WEST - GROUND FLOOR PLAN**

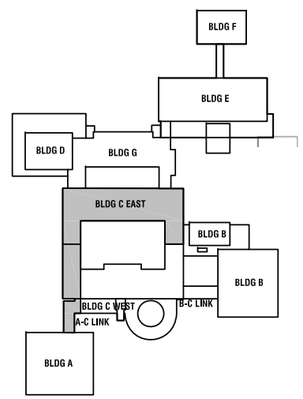
SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS

KEY PLAN

SCALE: NOT TO SCALE



LOCATION PLAN

ENVIRONMENTAL CONSULTANT

wsp

565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

White Plains Public Schools WP REAL LIFE LEARNING

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS CITY SCHOOL DISTRICT

INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL 580 NORTH STREET WHITE PLAINS, NY 10605

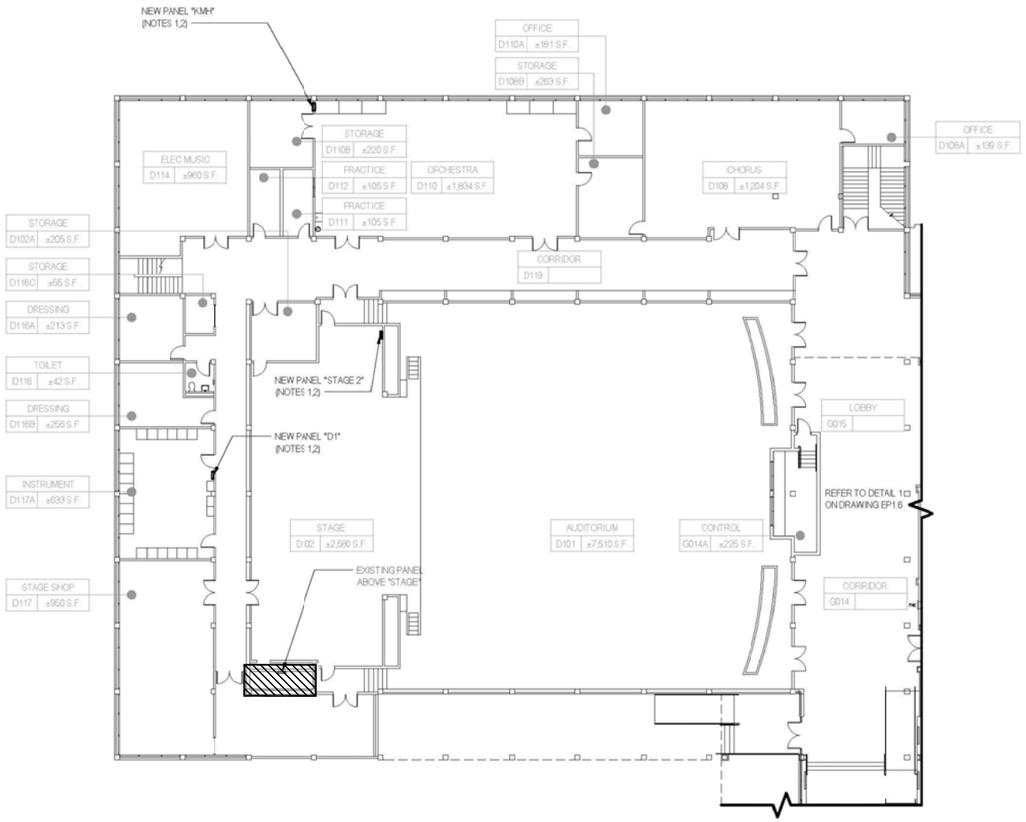
DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "C" GROUND FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM004**

DRAWING NUMBER: 4 OF 12

CONSULTANTS PROJECT #: 2043479.17

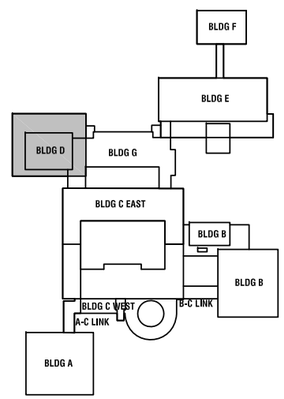


1 ACM005 BUILDING "D" - GROUND FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT
wsp
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
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WHITE PLAINS CITY SCHOOL DISTRICT

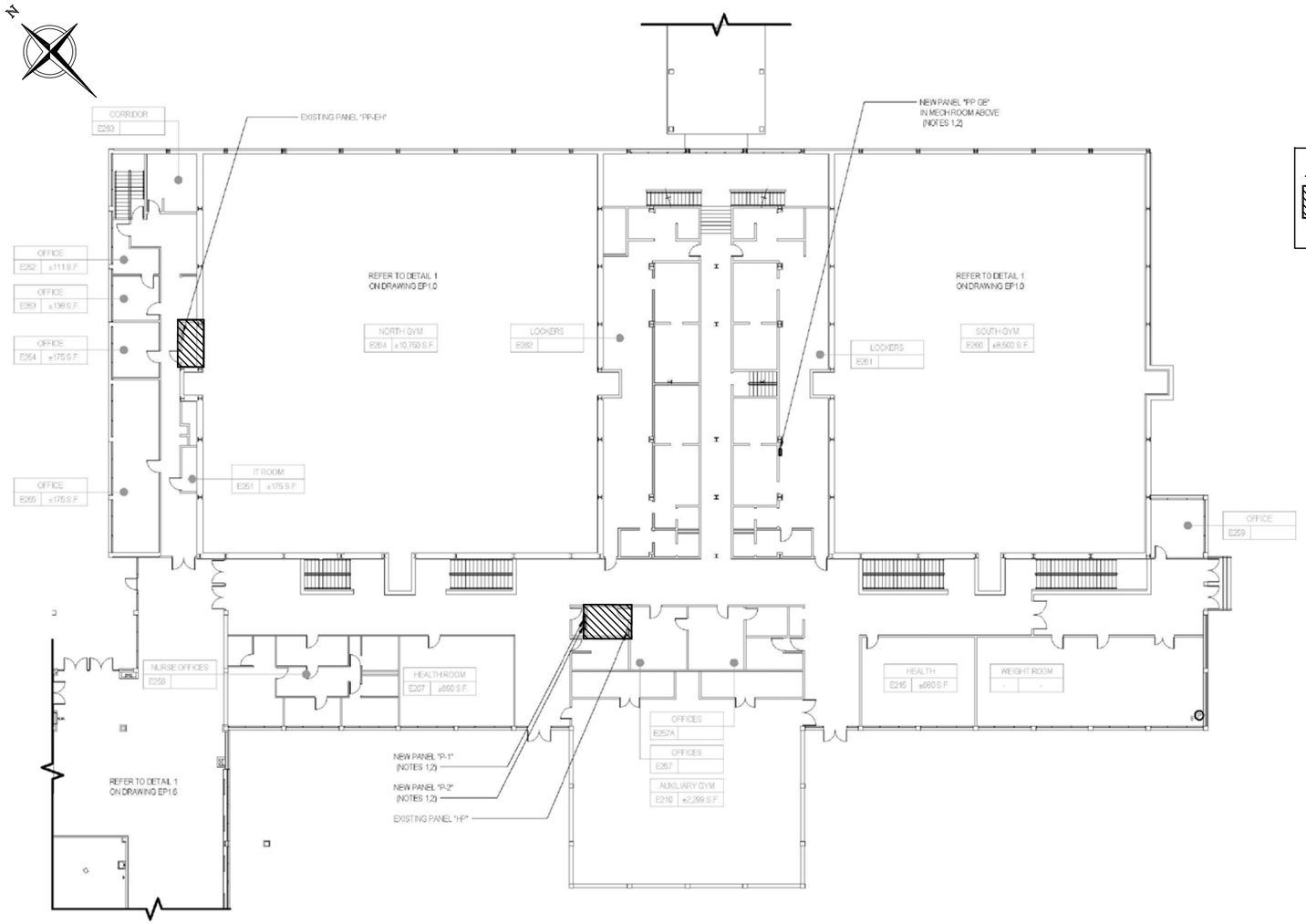
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL 580 NORTH STREET WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "D" GROUND FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM005**
	DRAWING NUMBER: 5 OF 12

CONSULTANTS PROJECT #: 2043479.17

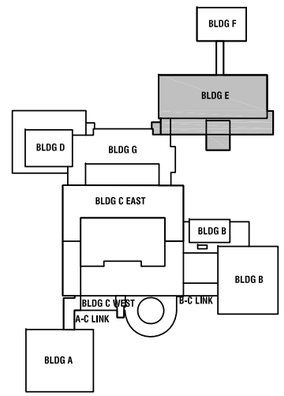


1 ACM006 BUILDING "E" - GROUND FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT
wsp
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
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WHITE PLAINS CITY SCHOOL DISTRICT

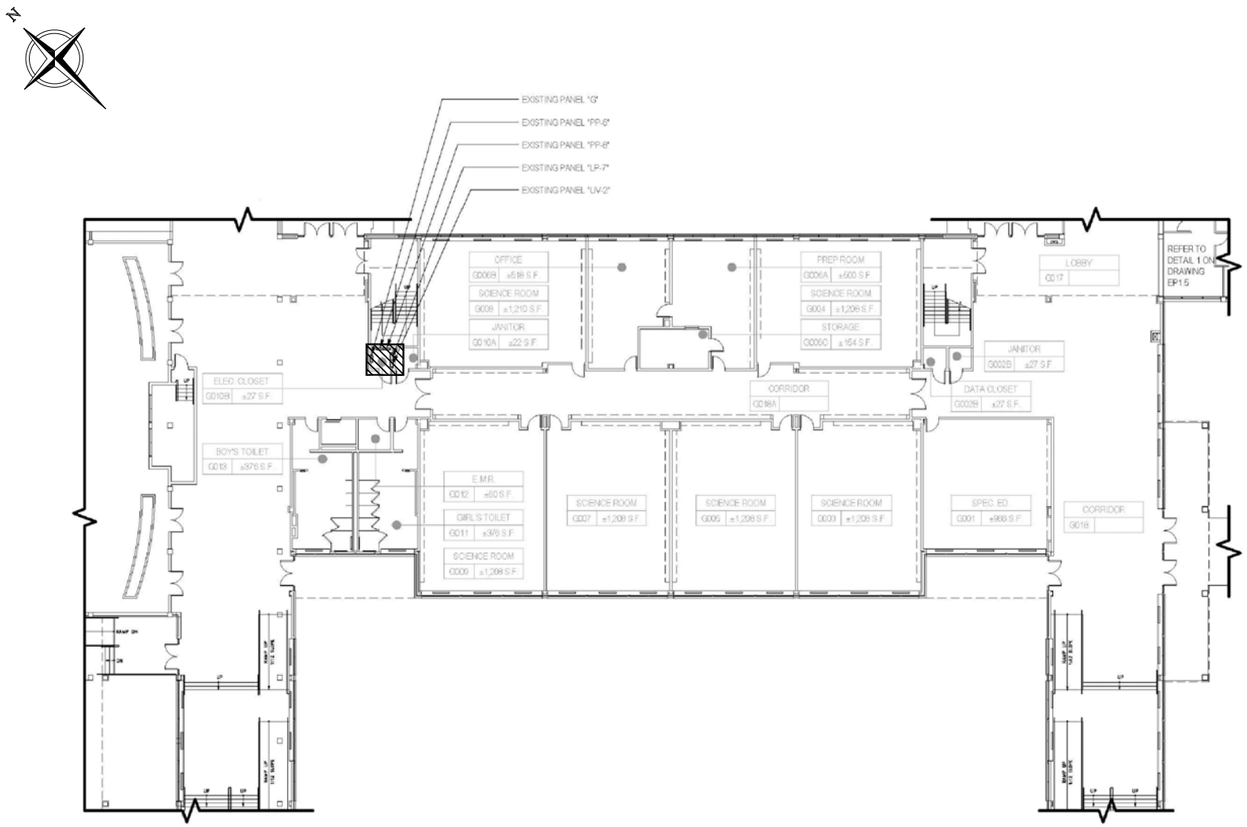
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "E" GROUND FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP./INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM006**
	DRAWING NUMBER: 6 OF 12

CONSULTANTS PROJECT #: 2043479.17

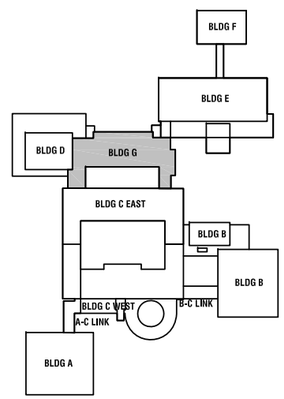


1 ACM007 BUILDING "G" - GROUND FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT
wsp
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
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WHITE PLAINS CITY SCHOOL DISTRICT

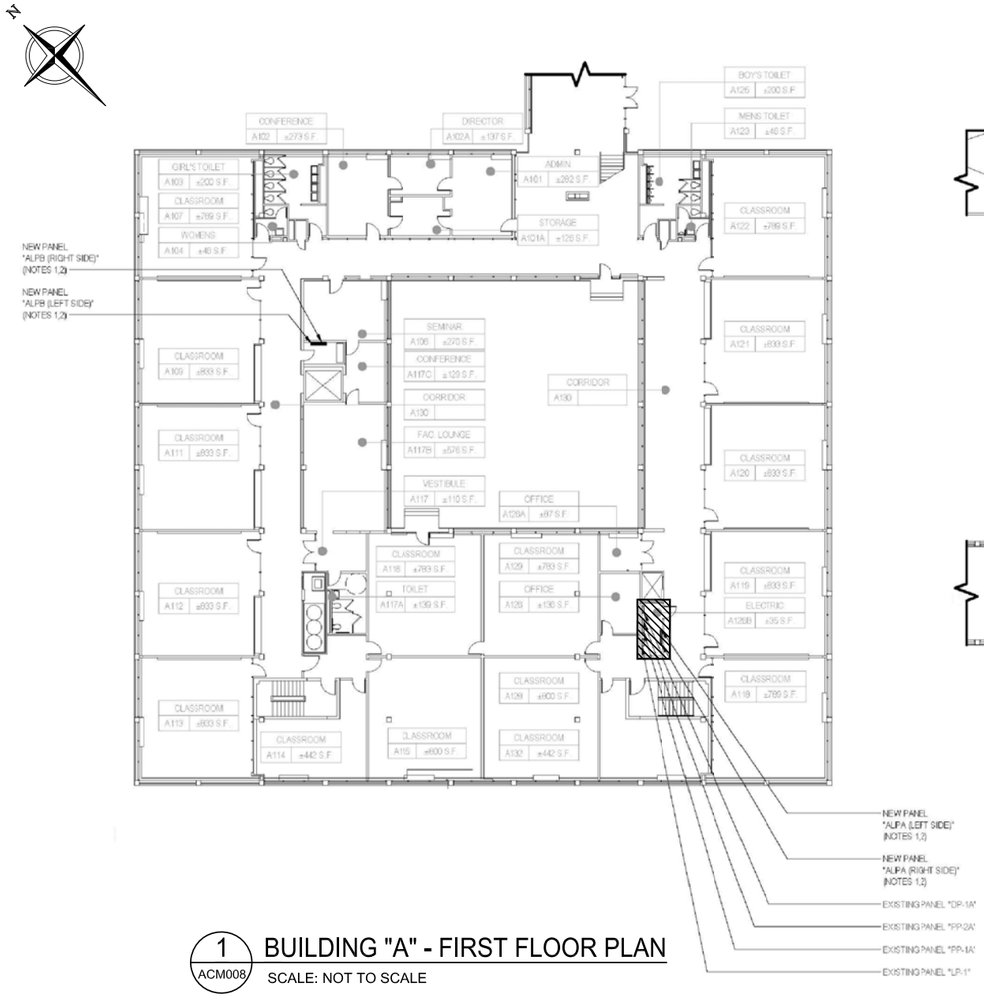
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "G" GROUND FLOOR PLAN

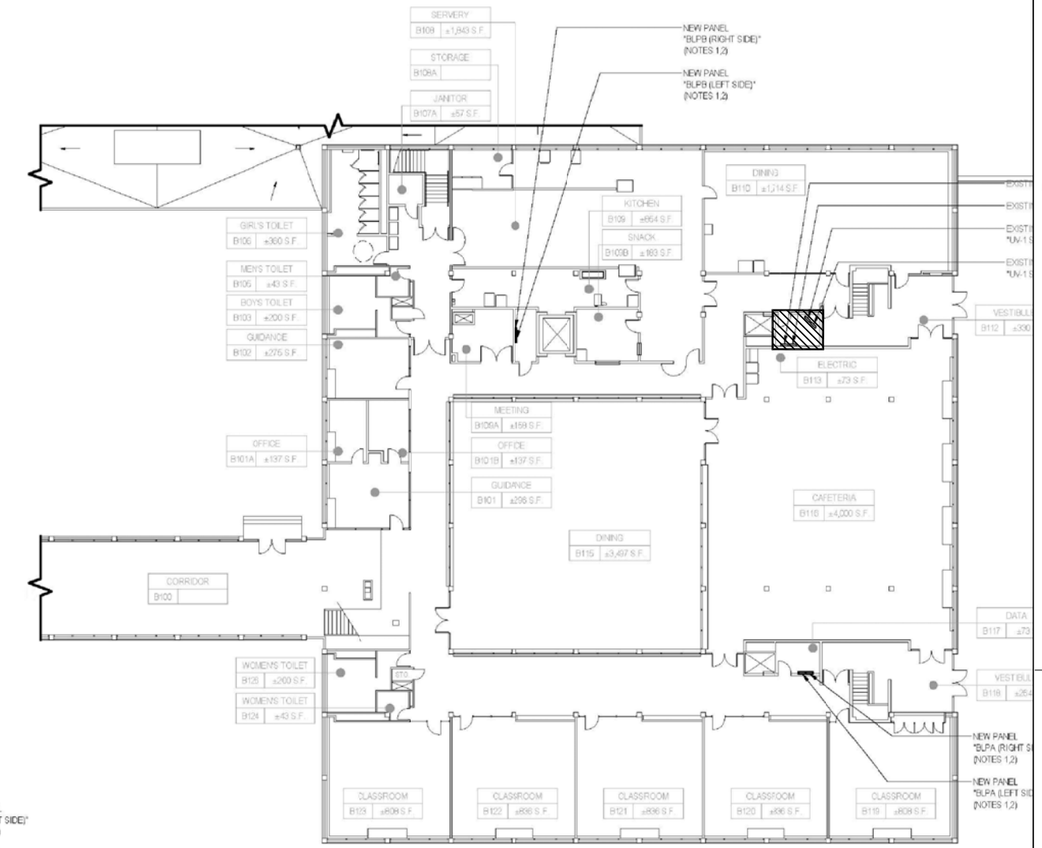
DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP./INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM007**
	DRAWING NUMBER: 7 OF 12

CONSULTANTS PROJECT #: 2043479.17



1 ACM008 BUILDING "A" - FIRST FLOOR PLAN

SCALE: NOT TO SCALE

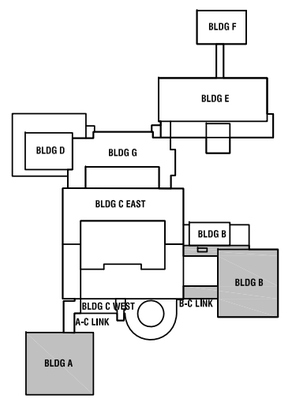


2 ACM008 BUILDING "B" - FIRST FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT

wsp

565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
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WHITE PLAINS CITY SCHOOL DISTRICT

INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

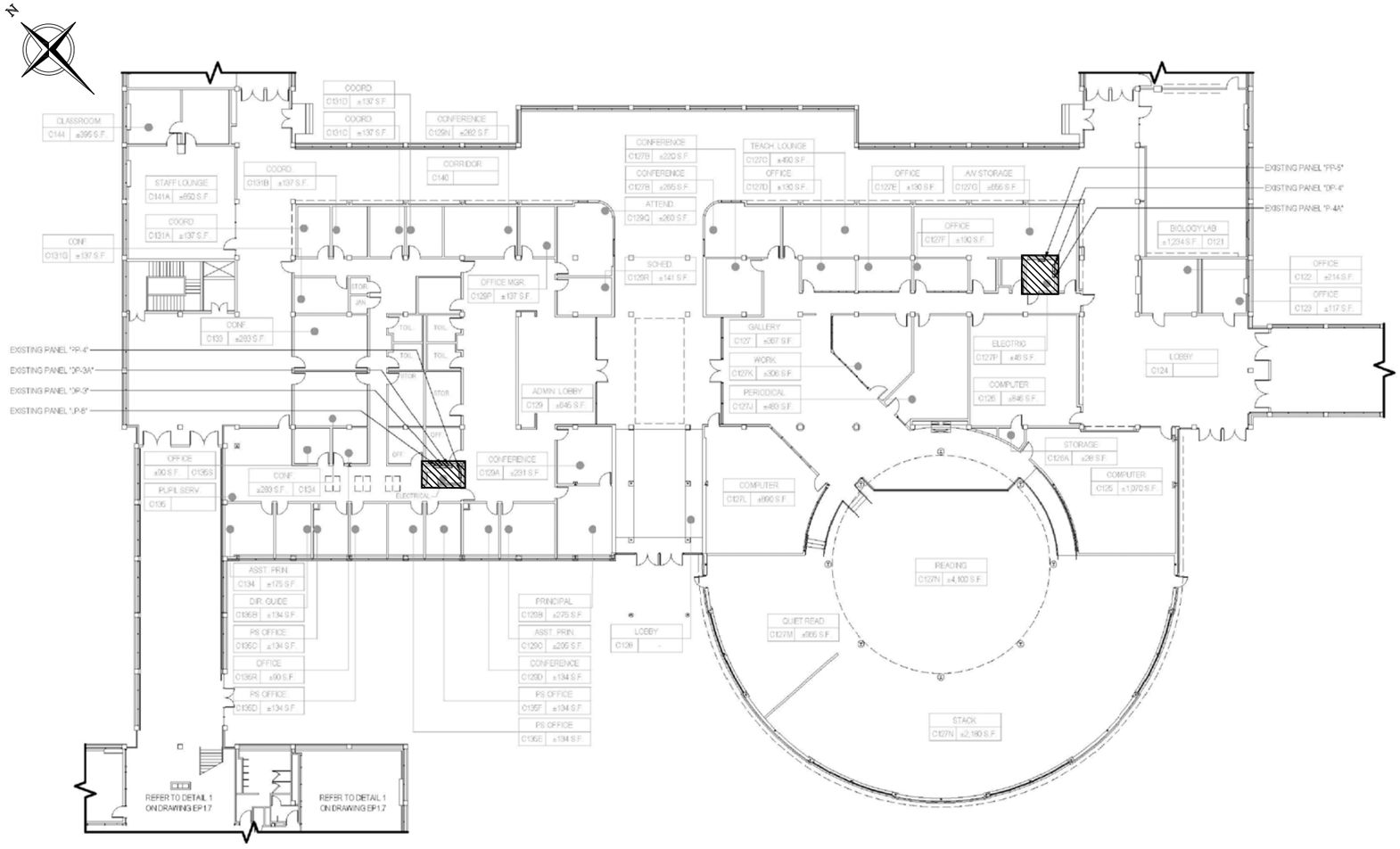
DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "A" AND "B" FIRST FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM008**

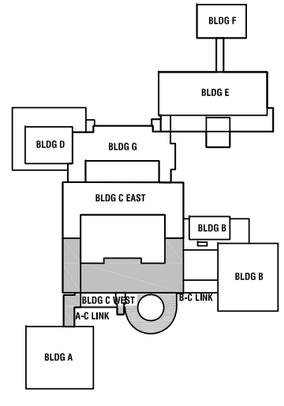
DRAWING NUMBER: 8 OF 12

CONSULTANTS PROJECT #: 2043479.17



1 ACM009 BUILDING "C" WEST - FIRST FLOOR PLAN

SCALE: NOT TO SCALE



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT
wsp
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ELMSFORD, NY 10523
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White Plains Public Schools WP REAL LIFE LEARNING

REVISIONS:

NUMBER	DESCRIPTION	DATE
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WHITE PLAINS CITY SCHOOL DISTRICT

INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

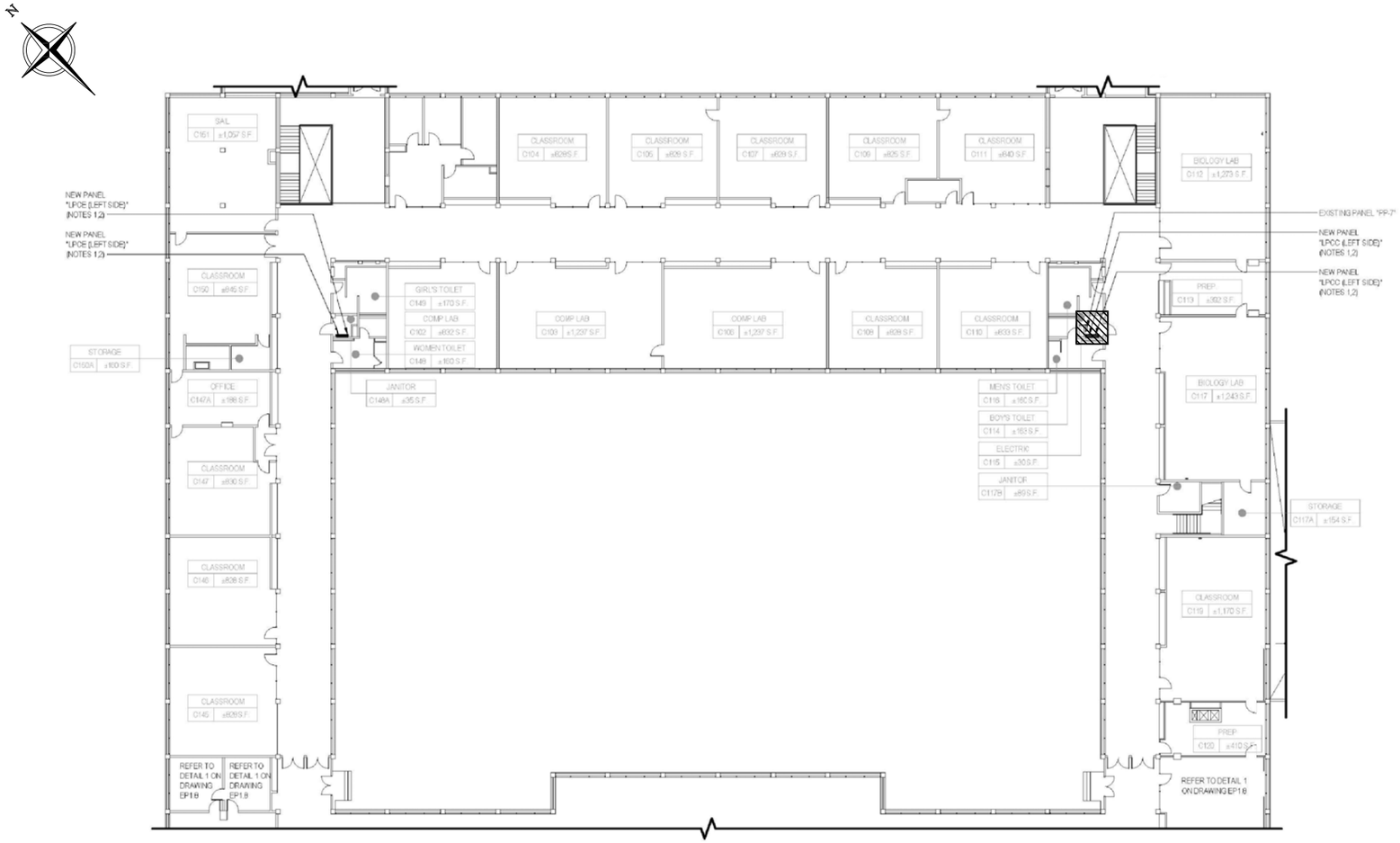
DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "C" WEST FIRST FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM009**

DRAWING NUMBER: 9 OF 12

CONSULTANTS PROJECT #: 2043479.17

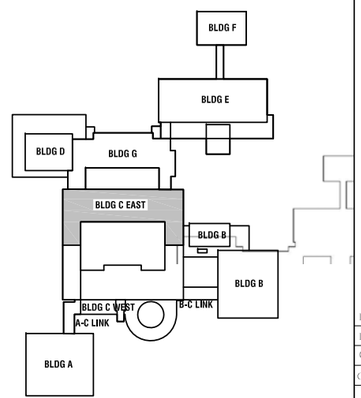


1 ACM010 BUILDING "C" EAST - FIRST FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT

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ELMSFORD, NY 10523
TEL: 914.798.3710 FAX: 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
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WHITE PLAINS CITY SCHOOL DISTRICT

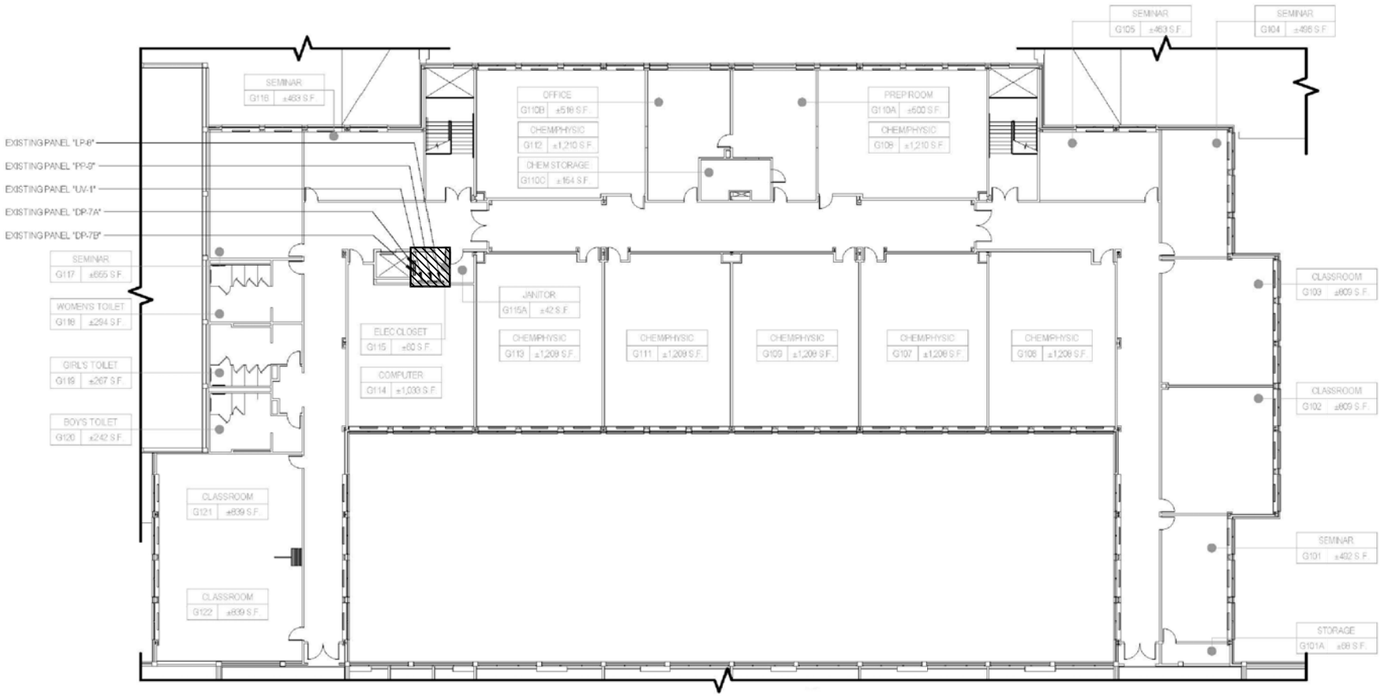
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "C" EAST FIRST FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM010**
	DRAWING NUMBER: 10 OF 12

CONSULTANTS PROJECT #: 2043479.17

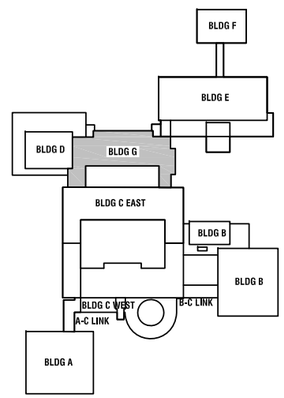


1 ACM011 BUILDING "G" - FIRST FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

ENVIRONMENTAL CONSULTANT

wsp

565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
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WHITE PLAINS CITY SCHOOL DISTRICT

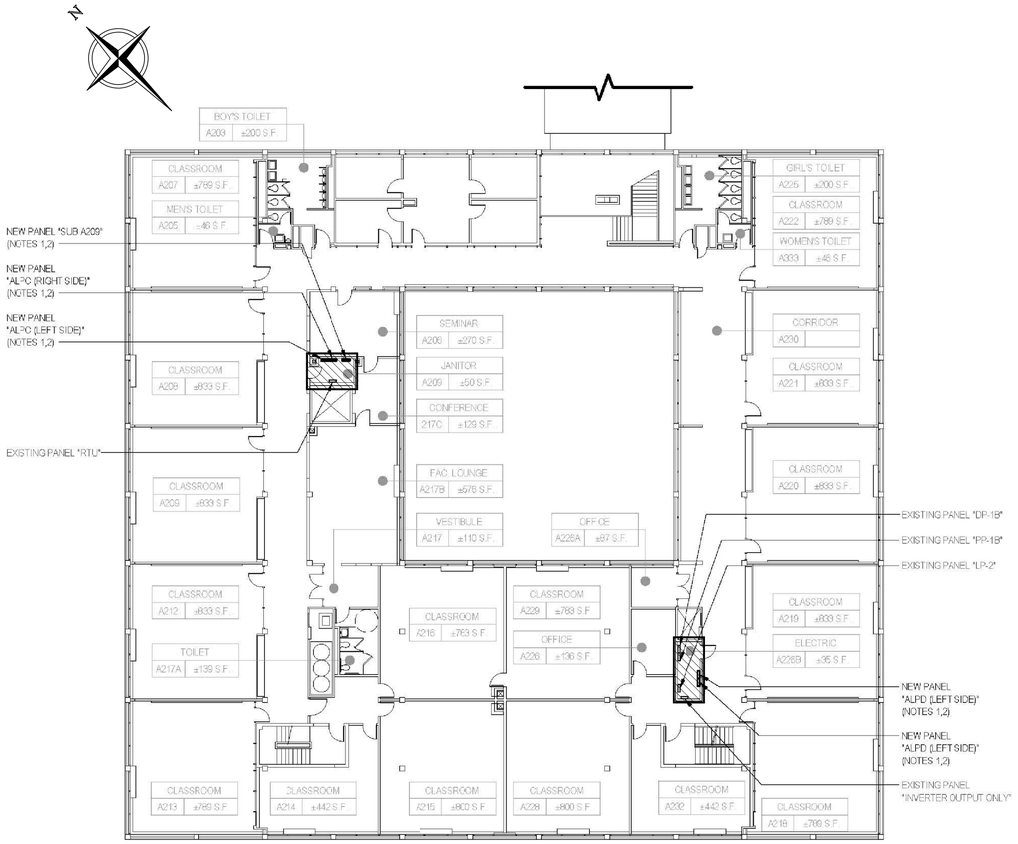
INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "G" FIRST FLOOR PLAN

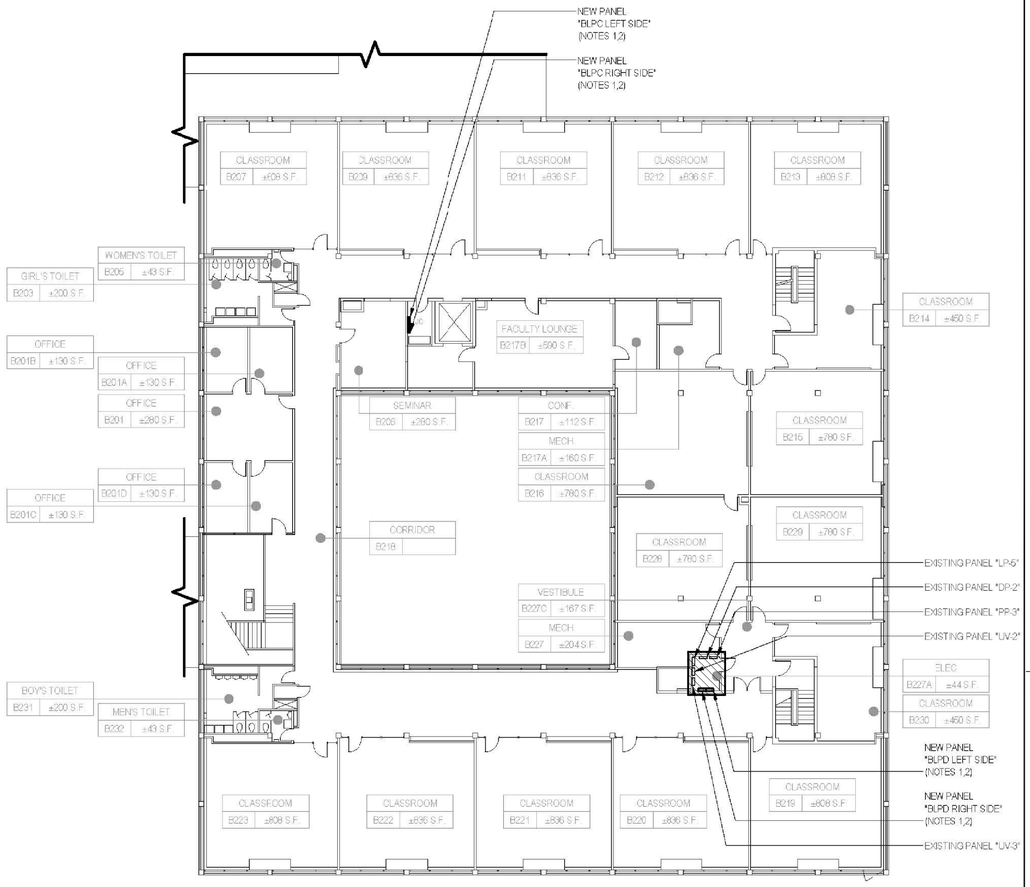
DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP./INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM011**
	DRAWING NUMBER: 11 OF 12

CONSULTANTS PROJECT #: 2043479.17



1 ACM012 BUILDING "A" - SECOND FLOOR PLAN

SCALE: NOT TO SCALE

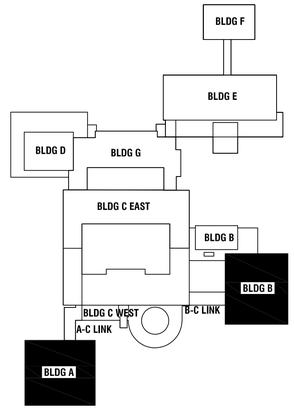


2 ACM012 BUILDING "B" - SECOND FLOOR PLAN

SCALE: NOT TO SCALE

LEGEND

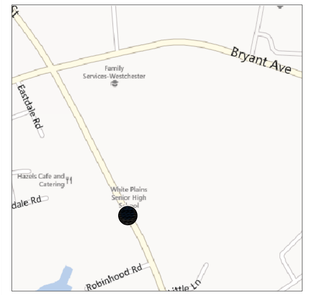
LOCATION OF ASSUMED ASBESTOS CONTAINING BRAIDED ELECTRICAL WIRING ASSOCIATED WITH EXISTING PANELS & CONDUITS



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN



ENVIRONMENTAL CONSULTANT

wsp

565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523
TEL. 914.798.3710 FAX 914.592.1734 WWW.WSP.COM

White Plains Public Schools WP REAL LIFE LEARNING

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS CITY SCHOOL DISTRICT

INTERIOR UPGRADES AND SITE WORK AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

ASBESTOS CONTAINING MATERIALS BUILDING "A" AND "B" SECOND FLOOR PLAN

DRAWN BY: J. GARCIA	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 09/25/2019
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**ACM012**
	DRAWING NUMBER: 12 OF 12

CONSULTANTS PROJECT #: 2043479.17

APPENDIX E:
PCB BULK SAMPLE FIELD DATA SHEETS WITH CHAIN OF CUSTODY & LABORATORY RESULTS

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone: (856) 303-2500 Fax: (856) 858-4571 Email: EnvChemistry2@emsl.com

Attn: **Marvin Luccioni**
Louis Berger U.S., Inc
96 Morton Street
8th floor
New York, NY 10014
Phone: (212) 612-7900
Fax:

9/26/2019

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 9/19/2019. The results are tabulated on the attached data pages for the following client designated project:

2043479.17

The reference number for these samples is EMSL Order #011911832. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (856) 303-2500.

Approved By:

Phillip Worby, Environmental Chemistry
Laboratory Director

The test results contained within this report meet the requirements of NELAP and/or the specific certification program that is applicable, unless otherwise noted.
NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, CA ELAP 1877

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (856) 303-2500 / (856) 858-4571
http://www.EMSL.com EnvChemistry2@emsl.com

EMSL Order: 011911832
CustomerID: LBAP78
CustomerPO:
ProjectID:

Attn: **Marvin Luccioni**
Louis Berger U.S., Inc
96 Morton Street
8th floor
New York, NY 10014

Phone: (212) 612-7900
Fax:
Received: 09/19/19 9:20 AM

Project: **2043479.17**

Analytical Results

Client Sample Description 01,02,03
Store Front Caulking, Gray; Main Entrance

Collected: 9/17/2019 ***Lab ID:*** *011911832-0001*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
GC-SVOA						
3540C/8082A	Aroclor-1016	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1221	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1232	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1242	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1248	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1254	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1260	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1262	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC
3540C/8082A	Aroclor-1268	ND D	0.96	mg/Kg	9/20/2019 AB	09/23/19 0:00 AC

Definitions:

MDL - method detection limit
J - Result was below the reporting limit, but at or above the MDL
ND - indicates that the analyte was not detected at the reporting limit
RL - Reporting Limit (Analytical)
D - Dilution

APPENDIX F:
COMPANY LICENSE, PERSONNEL CERTIFICATIONS AND LABORATORY ACCREDITATIONS

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

Louis Berger, U.S., Inc.
8th Floor
96 Morton Street

New York, NY 10014

FILE NUMBER: 19-132876
LICENSE NUMBER: 132876
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 02/14/2019
EXPIRATION DATE: 02/29/2020

Duly Authorized Representative – Craig Napolitano:

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)

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S

MARVIN LUCCIONI
CLASS(EXPIRES)
C ATEC(02/20) D INSP(02/20)
H PM (02/20) I PD (02/20)

CERT# 03-11021
DMV# 992503906

MUST BE CARRIED ON ASBESTOS PROJECTS

14020

01213 005126212 91

NEW YORK STATE OF OPPORTUNITY. Department of Labor

JOSUE GARCIA

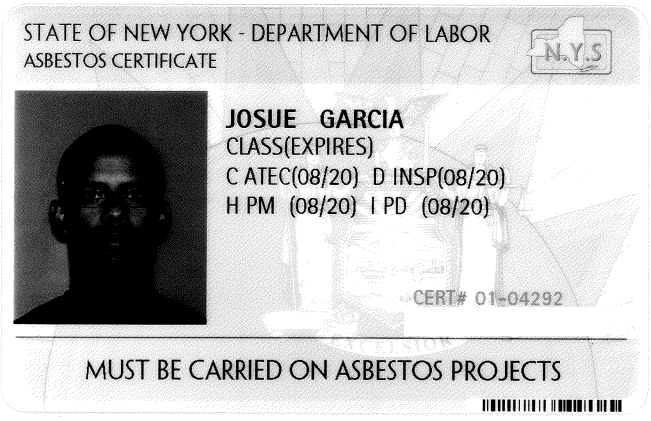
C/O LOUIS BERGER 96 MORTON ST 8TH FL
NEW YORK NY 10014

Enclosed is your new card.

NYS Department of Labor

The Department of Labor is happy to provide this improved card. We welcome your comments: nysdol@labor.ny.gov or call (518) 457-2735

YOUR NEW CARD



14020

01213 005123202 33

NEW YORK STATE OF OPPORTUNITY. Department of Labor

LUIS A NEVAREZ

C/O LOUIS BERGER, 96 MORTON ST APT 8FL
NEW YORK NY 10014

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NYS Department of Labor

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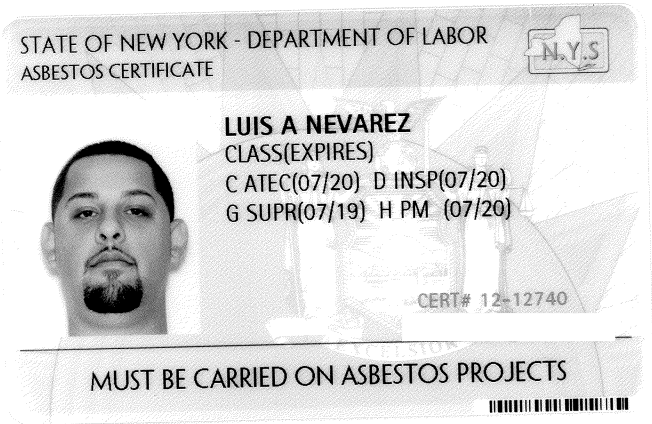

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-10

EMSL Analytical, Inc.

Carle Place, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2019-07-01 through 2020-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.
528 Mineola Ave.
Carle Place, NY 11514
Daniel Clarke
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Email: dclarke@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 101048-10

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

Effective 2019-07-01 through 2020-06-30

APPENDIX G:
FILE SEARCH

Louis Berger
565 Taxter Road, 5th Floor, Elmsford, NY 10523
Tel 914 798 3710 Fax 914 592 1734 www.louisberger.com

June 15, 2016

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: **Final Report of Environmental Services**
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger (LB) has completed a material Inspection at White Plains High School located at 550 North Street, White Plains, NY 10605. The Inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM), Lead Based Paints (LBP) and Polychlorinated Biphenyls (PCBs) associated with proposed Building Upgrades at the White Plains High School and Field Storage Building scope of work, based on the Final Bid Set design drawings dated July 2015.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

LOUIS BERGER

Craig Napolitano, CHMM
Director, Industrial Hygiene & Hazmat Services

FINAL REPORT OF ENVIRONMENTAL SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Prepared by:

565 Taxter Road, 5th Floor
Elmsford, New York 10523
Tel. (914) 798-3710
Fax (914) 592-1734

Project No. 3001329
Submission Date: June 15, 2016

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Appendices

1.0 EXECUTIVE SUMMARY

Louis Berger (LB) has performed a renovation specific material Inspection for the presence or absence of Asbestos-Containing Materials (ACM), Lead Based Paints (LBP) and Polychlorinated Biphenyls (PCBs) at White Plains High School located at 550 North Street, White Plains, NY 10605. The intent of this Inspection was to screen for Asbestos-Containing Materials (ACM), Lead Based Paints (LBP) and Polychlorinated Biphenyls (PCBs) that may be impacted during the proposed renovations.

Michael Gelfand and Dmitri Kirnossenko of LB performed this Inspection on May 31 and June 8, 2016. Mr. Kirnossenko has New York State Department of Labor (NYSDOL) Asbestos Inspector License (Cert# 07-01720) and New York State EPA as a Lead Inspector (Cert# NY-I-16279-3). Mr. Gelfand has NYSDOL Asbestos Inspector License (Cert# 98-17113). The results of the visual inspection and bulk sample analysis determined that the following suspect ACM, LBP and PCB materials may be impacted by the renovation project:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected by Berger indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Exterior Brick Mortar (gray)
- Tectum Ceiling Panels (gray)
- Asphalt (black)
- Cinderblock Mortar (gray)
- Ceiling Scratch Coat (gray)
- Canvas Wrap around Fiberglass Pipe & Fitting Insulation (gray)
- Wall Plaster (white coat)
- Wall Plaster (brown coat)

The following materials were **assumed to contain asbestos**:

- **None**

B. LEAD-BASED PAINTS

XRF shots collected indicate that the following testing combinations **are coated with lead-based paint** (greater than or equal to 1 mg/cm^2);

- **Beige, WALL, Cinderblock - Bldg. C, Corridor by Auxiliary Gym**

XRF shots collected indicate that the following testing combinations are not coated with lead-based paint (less than 1 mg/cm^2);

- Beige, DUCT, Metal
- Beige, WALL, Concrete
- Gray, WALL, Concrete
- Beige, WALL, Cinderblock
- Gray, WALL, Cinderblock
- Beige, CEILING, Concrete
- Varnish, DOOR, Wood
- Beige, COLUMN, Concrete
- Varnish, DOOR TRANSOM, Wood
- White, WALL, Cinderblock
- Beige, ELECTRICAL CONDUIT, Metal
- Red, WALL, Cinderblock
- Black, WALL, Cinderblock
- Red, CHAIR RAIL, Wood
- Beige, WALL, Sheetrock
- Blue, WALL, Plaster
- Gray, FLOOR, Concrete
- Green, OIL TANK, Metal
- Orange, WALL, Cinderblock
- Beige, DUCT, Metal
- Beige, WALL, Concrete
- Gray, WALL, Concrete
- Beige, WALL, Cinderblock
- Gray, WALL, Cinderblock
- Beige, CEILING, Concrete
- Varnish, DOOR, Wood
- Beige, COLUMN, Concrete
- Varnish, DOOR TRANSOM, Wood
- White, WALL, Cinderblock
- Beige, ELECTRICAL CONDUIT, Metal
- Red, WALL, Cinderblock
- Black, WALL, Cinderblock
- Red, CHAIR RAIL, Wood
- Beige, WALL, Sheetrock

C. PCB-CONTAINING MATERIAL

- Not applicable for this report

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 307 West 38th Street, New York, NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-9)
- New York State Environmental Laboratory Approval Program (Lab No. 11506)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

LEAD-BASED PAINT

Any work which disturbs painted surfaces containing lead shall be performed in accordance with the Occupational Safety and Health Administrations (OSHA) 29 CFR 1926.62 (Lead in Construction Standard) and EPA's 40 CFR 745 regulations. Personal air monitoring should be conducted when disturbing lead based paints and lead containing materials as per 29CFR1926.62 (OSHA).

In addition, all waste generated as part of the project, regardless of the lead content in the paint, shall be tested in accordance with the EPA Resource Conservation and Recovery Act (RCRA) to determine the classification of the waste. Under RCRA, any waste material that, when tested by Toxicity Characteristics Leaching Procedure (TCLP), results in a leachate lead concentration of five (5) parts per million or greater must be disposed of at an EPA licensed hazardous waste facility.

The finer renovation debris and paint chips that result from renovation of components with measurable quantities of lead can be tested by TCLP, or can be assumed hazardous waste and disposed of accordingly. If the scope of work is increased to include removal of actionable building components, we recommend that a TCLP test be performed on one typical component (e.g. metal, sheetrock, plaster, masonry, etc.) to determine proper disposal for all similar components.

The incurred cost for disposal of lead based paint materials/debris associated with the The Staten Island Institute of Arts and Sciences at Snug Harbor Cultural Center building A renovations will depend upon the TCLP results for materials/debris collected and the total weight of items which return TCLP results above the EPA allowed 5 parts per million (see section 2.0 for analysis methodology). It should be noted that LBP on 2nd floor plaster walls will be removed and disposed of as ACM.

The cost of the TCLP depends on the laboratory and location; but typically, a full TCLP analysis may cost from $150 to $350. Any waste material, that when tested by TCLP, results in a leachate lead concentration of five (5) parts per million or greater must be disposed of at an EPA licensed hazardous waste facility. Cost of disposal may range from $5,000 to $7,000 per ton of waste.

POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761), the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605), New York State Department of Environmental Conservation 6NYCRR 370-376 and federal Occupational Safety and Health Administration (OSHA) 29CFR 1926 & 1910. These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for suspect ACM, LBP and PCB materials that may be impacted by the proposed renovations. Locations surveyed include:

- School Building Exterior
- School Building Interior
- Auxilary Gym Roof
- Field House Exterior
- Field House Interior

A. ASBESTOS-CONTAINING MATERIAL

Materials examined during the Berger Inspection included:

- Cinderblock Mortar
- Sheetrock Walls
- Joint Compound assoc. with Sheetrock Walls
- 1'x1' Pinhole Ceiling Tiles
- Mastic assoc. with Pinhole Ceiling Tiles
- 2'x4' Fissured Ceiling Tiles
- 1'x1' Gouged Ceiling Tiles
- 2'x4' Small Pinhole Ceiling Tiles
- 1'x1' Fissured Ceiling Tiles
- 2'x2' Small Pinhole Ceiling Tiles
- Fitting Insulation assoc. with Fiberglass Pipe Insulation
- Wrap around Fiberglass Pipe Insulation
- Tectum Ceiling Panels (gray)
- Wall Plaster (white coat)
- Wall Plaster (brown coat)
- Tar on Concrete Deck
- Paper to Foam Insulation
- Fabric Barrier
- Exterior Brick Mortar (gray)
- Asphalt (black)
- Cinderblock Mortar (gray)
- Ceiling Scratch Coat (gray)
- Canvas Wrap around Fiberglass Pipe & Fitting Insulation (gray)

Based upon visual inspection and bulk sample analysis asbestos has been confirmed to exist in the following materials:

- **None**

Asbestos was **not detected** in the following materials via PLM and/or TEM analysis:

- Exterior Brick Mortar (gray)
- Tectum Ceiling Panels (gray)
- Asphalt (black)
- Cinderblock Mortar (gray)
- Ceiling Scratch Coat (gray)
- Canvas Wrap around Fiberglass Pipe & Fitting Insulation (gray)
- Wall Plaster (white coat)
- Wall Plaster (brown coat)

The following materials were **assumed to contain asbestos**:

- **None**

B. LEAD-BASED PAINT ASSESSMENT

Surfaces examined during the Inspection included:

- Beige, DUCT, Metal
- Beige, WALL, Concrete
- Gray, WALL, Concrete
- Beige, WALL, Cinderblock
- Gray, WALL, Cinderblock
- Beige, CEILING, Concrete
- Varnish, DOOR, Wood
- Beige, COLUMN, Concrete
- Varnish, DOOR TRANSOM, Wood
- White, WALL, Cinderblock
- Beige, ELECTRICAL CONDUIT, Metal
- Red, WALL, Cinderblock
- Black, WALL, Cinderblock
- Red, CHAIR RAIL, Wood
- Beige, WALL, Sheetrock
- Blue, WALL, Plaster
- Gray, FLOOR, Concrete
- Green, OIL TANK, Metal
- Orange, WALL, Cinderblock

Based upon visual inspection and XRF testing, lead has been confirmed to exist in the following testing combinations:

- **Beige, Cinderblock, WALL**

Lead was **not detected** in the following testing combinations within the building via XRF testing:

- Beige, DUCT, Metal
- Beige, WALL, Concrete
- Gray, WALL, Concrete
- Beige, WALL, Cinderblock
- Gray, WALL, Cinderblock
- Beige, CEILING, Concrete
- Varnish, DOOR, Wood
- Beige, COLUMN, Concrete
- Varnish, DOOR TRANSOM, Wood
- White, WALL, Cinderblock
- Beige, ELECTRICAL CONDUIT, Metal
- Red, WALL, Cinderblock
- Black, WALL, Cinderblock
- Red, CHAIR RAIL, Wood
- Beige, WALL, Sheetrock
- Blue, WALL, Plaster
- Gray, FLOOR, Concrete
- Green, OIL TANK, Metal
- Orange, WALL, Cinderblock

C. PCB-CONTAINING MATERIAL

- Not applicable for this report

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were sampled and analyzed for asbestos content by Berger:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT	NOTES
1	Interior	Cinderblock Mortar	Non-ACM	2013 Berger report
2	Interior	Sheetrock Walls	Non-ACM	2013 Berger report
3	Interior	Joint Compound assoc. with Sheetrock Walls	Non-ACM	2013 Berger report
4	Interior	1'x1' Pinhole Ceiling Tiles	Non-ACM	2013 Berger report
5	Interior	Mastic assoc. with Pinhole Ceiling Tiles	Non-ACM	2013 Berger report
12	Interior	2'x4' Fissured Ceiling Tiles	Non-ACM	2013 Berger report
13	Interior	1'x1' Gouged Ceiling Tiles	Non-ACM	2013 Berger report
14	Interior	2'x4' Small Pinhole Ceiling Tiles	Non-ACM	2013 Berger report
15	Interior	1'x1' Fissured Ceiling Tiles	Non-ACM	2013 Berger report
16	Interior	2'x2' Small Pinhole Ceiling Tiles	Non-ACM	2013 Berger report
17	Interior	Fitting Insulation assoc. with Fiberglass Pipe Insulation	Non-ACM	2013 Berger report
18	Interior	Wrap around Fiberglass Pipe Insulation	Non-ACM	2013 Berger report
B	Auxiliary Gym	Tectum Ceiling Panels (gray)	Non-ACM	
8	Bldg. D, Auditorium	Cinderblock Mortar	Non-ACM	2013 Berger report
G	Bldg. D, Room 102A (Auditorium Stage Storage)	Wall Plaster (white coat)	Non-ACM	
H	Bldg. D, Room 102A (Auditorium Stage Storage)	Wall Plaster (brown coat)	Non-ACM	Confirmed via ELAP 198.8 Method
9	Gym Roofs	Tar on Concrete Deck	Non-ACM	2013 Berger report
10	Gym Roofs	Paper to Foam Insulation	Non-ACM	2013 Berger report
11	Gym Roofs	Fabric Barrier	Non-ACM	2013 Berger report
A	Building A, Exterior	Exterior Brick Mortar (gray)	Non-ACM	
C	Field House, Exterior	Asphalt (black)	Non-ACM	
D	Field House, Boiler/Mechanical Room	Cinderblock Mortar (gray)	Non-ACM	
E	Field House, Boiler/Mechanical Room	Ceiling Scratch Coat (gray)	Non-ACM	
F	Field House, Boiler/Mechanical Room	Canvas Wrap around Fiberglass Pipe & Fitting Insulation (gray)	Non-ACM	

Bold = Positive for ACM

B. LEAD-BASED PAINT

The lead Inspection involved a thorough visual examination of all accessible areas impacted by the proposed renovation project. The following suspect surfaces were tested for lead content:

LOCATION	MATERIAL (BLDG. COMPONENT, SUBSTRATE)	COLOR	RESULT
Bldg. A, Corridor by Room A003, A004	DUCT, Metal	Beige	Non-LBP
Bldg. A, Corridor by Room A003, A004	WALL, Concrete	Beige	Non-LBP
Bldg. A, Corridor by Room A003, A004	WALL, Concrete	Gray	Non-LBP
Bldg. A, Corridor by Room A003, A004	WALL, Cinderblock	Beige	Non-LBP
Bldg. A, Corridor by Room A003, A004	WALL, Cinderblock	Gray	Non-LBP
Bldg. A, Corridor by Room A003, A004	CEILING, Concrete	Beige	Non-LBP
Bldg. A, Room A003	DOOR, Wood	Varnish	Non-LBP
Bldg. A, Room A003	DUCT, Metal	Beige	Non-LBP
Bldg. A, Room A003	WALL, Cinderblock	Beige	Non-LBP
Bldg. A, Room A003	COLUMN, Concrete	Beige	Non-LBP
Bldg. A, Room A003	CEILING, Concrete	Beige	Non-LBP
Bldg. A, Room A003	DOOR TRANSOM, Wood	Varnish	Non-LBP
Bldg. A, Room A004	DOOR, Wood	Varnish	Non-LBP
Bldg. A, Room A004	DUCT, Metal	Beige	Non-LBP
Bldg. A, Room A004	WALL, Cinderblock	Beige	Non-LBP
Bldg. A, Room A004	COLUMN, Concrete	Beige	Non-LBP
Bldg. A, Room A004	CEILING, Concrete	Beige	Non-LBP
Bldg. A, Room A004	DOOR TRANSOM, Wood	Varnish	Non-LBP
Bldg. A, Room A008	DOOR, Wood	Varnish	Non-LBP
Bldg. A, Room A008	DUCT, Metal	Beige	Non-LBP
Bldg. A, Room A008	WALL, Cinderblock	White	Non-LBP
Bldg. A, Room A008	WALL, Cinderblock	Beige	Non-LBP
Bldg. A, Room A008	COLUMN, Concrete	Beige	Non-LBP
Bldg. A, Room A008	CEILING, Concrete	Beige	Non-LBP
Bldg. D, Ground Floor Corridor	WALL, Cinderblock	Beige	Non-LBP
Bldg. D, Ground Floor Corridor	COLUMN, Concrete	Beige	Non-LBP
Bldg. D, Room 102A (Stage Storage)	WALL, Plaster	Blue	Non-LBP
Bldg. E, Auxilary Gym	ELECTRICAL CONDUIT, Metal	Beige	Non-LBP
Bldg. E, Auxilary Gym	WALL, Cinderblock	Red	Non-LBP
Bldg. E, Auxilary Gym	WALL, Cinderblock	Beige	Non-LBP
Bldg. E, Auxilary Gym	WALL, Cinderblock	Black	Non-LBP
Bldg. E, Auxilary Gym	CHAIR RAIL, Wood	Red	Non-LBP
Bldg. E, Corridor by Auxilary Gym	**WALL, Cinderblock**	**Beige**	**LBP**
Bldg. E, Corridor by Auxilary Gym	WALL, Cinderblock	Beige	Non-LBP
Bldg. E, Room E216	WALL, Cinderblock	Beige	Non-LBP
Bldg. E, Room E216	WALL, Sheetrock	Beige	Non-LBP
Bldg. G, Ground Floor Corridor	WALL, Cinderblock	Beige	Non-LBP
Field House, Boiler Room	WALL, Cinderblock	Beige	Non-LBP
Field House, Boiler Room	FLOOR, Concrete	Gray	Non-LBP
Field House, Boiler Room	OIL TANK, Metal	Green	Non-LBP

LOCATION	MATERIAL (BLDG. COMPONENT, SUBSTRATE)	COLOR	RESULT
Field House, Exterior	WALL, Cinderblock	Beige	Non-LBP
Field House, Locker Room	WALL, Cinderblock	Beige	Non-LBP
Field House, Locker Room	WALL, Cinderblock	Black	Non-LBP
Field House, Locker Room	WALL, Cinderblock	Orange	Non-LBP

Bold = Positive for LEAD

C. PCB-CONTAINING MATERIAL

- Not applicable for this report

4.2 SAMPLE ANALYSIS TABLE

ACM laboratory analysis results are included in Appendix A.

5.0 AREAS NOT ACCESSIBLE

During the Inspection the following areas were not accessible:

- None

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM materials have been identified in this inspection that may be impacted as part of the renovations at the White Plains High School. These materials, reported in Section 3.0 of this report, may require complete removal prior to the start of the renovation project. No PCBs were identified during this Inspection.

The ACM, LBP & PCB Inspection was conducted at the request of White Plains City School District for the proposed renovations, as provided by email from H2M Senior Project Architect. Any change in the scope of work will require further investigation to accurately classify any additional ACM, LBP or PCBs resulting from the modified or updated scope of work.

7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of LB's efforts for the environmental inspection work for the White Plains High School.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of LB's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which LB is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon LB's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:

Dmitri Kirnossenko
NYS DOL Inspector

Reviewed by:

Craig Napolitano, CHMM
Director, Industrial
Hygiene & Hazmat Services

APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

SUMMARY OF LABORATORY RESULTS

White Plains HS, 550 North St, White Plains, NY

Homogeneous Area	Sample No.	Description/Location	Material	PLM Results %	PLM-NOB Results %	TEM-NOB Results %	Vermiculite Results %	Vermiculite Method 198.8 Results %
Samples collected on 5/31/2016								
A	1	Bldg. A, Outside Server Rm A004	Exterior Brick Mortar (gray)	NAD	---	---	---	---
	2	Bldg. A, at Location of New Generator		NAD	---	---	---	---
B	3	Bldg. E, Auxilary Gym	Tectum Ceiling Panels (gray)	---	NAD	NAD	---	---
	4	Bldg. E, Auxilary Gym		---	NAD	NAD	---	---
C	5	Field House, North Side	Asphalt (black)	---	NAD	NAD	---	---
	6	Field House, South Side		---	NAD	NAD	---	---
D	7	Field House, Mechanical Room	Cinderblock Mortar (gray)	NAD	---	---	---	---
	8	Field House, North Side		NAD	---	---	---	---
E	9	Field House, Mechanical Room	Ceiling Scratch Coat (gray)	NAD	---	---	NVD	NVD
	10	Field House, Mechanical Room		NAD	---	---	NVD	NVD
	11	Field House, Mechanical Room		NAD	---	---	NVD	NVD
F	12	Field House, Mechanical Room	Canvas Wrap around Fiberglass Pipe & Fitting Insulation (gray)	NAD	---	---	---	---
	13	Field House, Mechanical Room		NAD	---	---	---	---
	14	Field House, Mechanical Room		NAD	---	---	---	---
G	15	Bldg. D, Stage Storage	Wall Plaster (brown coat)	NAD	---	---	Vermiculite Detected	NAD
	16	Bldg. D, Stage Storage		NAD	---	---	Vermiculite Detected	NAD
	17	Bldg. D, Stage Storage		NAD	---	---	Vermiculite Detected	NAD
H	18	Bldg. D, Stage Storage	Wall Plaster (white coat)	NAD	---	---	NVD	NVD
	19	Bldg. D, Stage Storage		NAD	---	---	NVD	NVD
	20	Bldg. D, Stage Storage		NAD	---	---	NVD	NVD

NA/PS = sample not analyzed/stop at first positive method

NAD = no asbestos detected

--- = sample not analyzed by methodology

x % = % of asbestos detected

APPENDIX B:
ASBESTOS BULK SAMPLE FIELD DATA SHEETS WITH CHAIN OF CUSTODY AND LABORATORY RESULTS

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031615256
Customer ID: LBAP78
Customer PO: 3001329.00
Project ID:

Attention: Louis Berger & Associates, PC
48 Wall St.
New York, NY 10005

Phone: (212) 612-7900
Fax:
Received Date: 6/ 1/2016 12:07 PM
Analysis Date: 6/ 4/2016
Collected Date: 5/31/2016

Project: 3001329.00/ WPHS/ 550 NORTH ST/ WHITE PLAINS NY/ THROUGHOUT

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos: Fibrous	Non-Asbestos: Non-Fibrous	Asbestos
Sample ID 1 *031615256-0001*		**Description** BLDG A - OUTSIDE SERVER RM A004 - EXTERIOR BRICK MORTAR (GREY)			
		Homogeneity Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Brown		22.00% Ca Carbonate 15.00% Non-fibrous (other) 63.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 2 *031615256-0002*		**Description** BLDG A - AT LOCATION OF NEW GENERATOR - EXTERIOR BRICK MORTAR (GREY)			
		Homogeneity Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Gray		45.00% Non-fibrous (other) 55.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 3 *031615256-0003*		**Description** BLDG E - AUXILARY GYM - TEXTURE CEILING PANELS (GREY)			
		Homogeneity Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Brown	78.00% Cellulose	15.00% Ca Carbonate 7.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 4 *031615256-0004*		**Description** BLDG E - AUXILARY GYM - TEXTURE CEILING PANELS (GREY)			
		Homogeneity Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Brown/Gray	60.00% Cellulose	25.00% Gypsum 15.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 06/05/2016 11:54:14

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031615256
Customer ID: LBAP78
Customer PO: 3001329.00
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 5 *031615256-0005*		**Description** FIELD HOUSE, NORTH SIDE - ASPHALT (BLACK) **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	6/ 4/2016	Black			**Inconclusive: None Detected**
No Vermculite detected.					
TEM NYS 198.4 NOB	6/ 4/2016	Black			**None Detected**
Sample ID 6 *031615256-0006*		**Description** FIELD HOUSE, SOUTH SIDE - ASPHALT (BLACK) **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	6/ 4/2016	Black			**Inconclusive: None Detected**
No Vermculite detected.					
TEM NYS 198.4 NOB	6/ 4/2016	Black			**None Detected**
Sample ID 7 *031615256-0007*		**Description** FIELD HOUSE, MECHANICAL ROOM - CINDERBLOCK MORTAR (GREY) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Gray		28.00% Ca Carbonate 28.00% Non-fibrous (other) 44.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 8 *031615256-0008*		**Description** FIELD HOUSE, NORTH SIDE - CINDERBLOCK MORTAR (GREY) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Brown		40.00% Gypsum 15.00% Non-fibrous (other) 45.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 9 *031615256-0009*		**Description** FIELD HOUSE, MECHANICAL ROOM - CEILING SCRATCH COAT (GREY) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Gray		33.00% Ca Carbonate 27.00% Non-fibrous (other) 40.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 06/05/2016 11:54:14

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031615256
Customer ID: LBAP78
Customer PO: 3001329.00
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 10		**Description**	FIELD HOUSE, MECHANICAL ROOM - CEILING SCRATCH COAT (GREY)		
031615256-0010		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	6/ 5/2016	Gray		26.00% Ca Carbonate 27.00% Non-fibrous (other) 47.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 11		**Description**	FIELD HOUSE, MECHANICAL ROOM - CEILING SCRATCH COAT (GREY)		
031615256-0011		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	6/ 5/2016	Gray		25.00% Ca Carbonate 15.00% Non-fibrous (other) 60.00% Quartz	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 12		**Description**	FIELD HOUSE, MECHANICAL ROOM - CANVAS WRAP AROUND FIBERGLASS PIPE + FITTING (GREY)		
031615256-0012		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	6/ 5/2016	Gray/Yellow	28.00% Min. Wool	30.00% Gypsum 42.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 13		**Description**	FIELD HOUSE, MECHANICAL ROOM - CANVAS WRAP AROUND FIBERGLASS PIPE + FITTING (GREY)		
031615256-0013		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	6/ 5/2016	Brown	40.00% Cellulose	60.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 14		**Description**	FIELD HOUSE, MECHANICAL ROOM - CANVAS WRAP AROUND FIBERGLASS PIPE + FITTING (GREY)		
031615256-0014		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	6/ 5/2016	Brown	90.00% Cellulose	10.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 06/05/2016 11:54:14

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031615256
Customer ID: LBAP78
Customer PO: 3001329.00
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 15 *031615256-0015*		**Description** BLDG D, STAGE STORAGE RM - WALL PLASTER (BROWN COAT) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Brown		100.00% Non-fibrous (other)	**None Detected**
Surfacing Material containing vermiculite. NYS requires ELAP method 198.8.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 16 *031615256-0016*		**Description** BLDG D, STAGE STORAGE RM - WALL PLASTER (BROWN COAT) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	Brown		100.00% Non-fibrous (other)	
Surfacing Material containing vermiculite. NYS requires ELAP method 198.8.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 17 *031615256-0017*		**Description** BLDG D, STAGE STORAGE RM - WALL PLASTER (BROWN COAT) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016			100.00% Non-fibrous (other)	
Surfacing Material containing vermiculite. NYS requires ELAP method 198.8.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 18 *031615256-0018*		**Description** BLDG D, STAGE STORAGE RM - WALL PLASTER (WHITE COAT) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	White		44.00% Ca Carbonate 56.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 19 *031615256-0019*		**Description** BLDG D, STAGE STORAGE RM - WALL PLASTER (WHITE COAT) **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	6/ 5/2016	White		50.00% Ca Carbonate 50.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 06/05/2016 11:54:14

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031615256
Customer ID: LBAP78
Customer PO: 3001329.00
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 20		**Description**	BLDG D, STAGE STORAGE RM - WALL PLASTER (WHITE COAT)		
031615256-0020		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	6/ 5/2016	White		50.00% Ca Carbonate 50.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected. Inseparable paint / coating layer included in analysis					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 06/05/2016 11:54:14

EMSL Analytical, Inc.
307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031615256
Customer ID: LBAP78
Customer PO: 3001329.00
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Scope: Leica #13 Ser. 9640113941VM0035 Scope: Leica #12 Ser. 9640113941VM0040
Scope: JEOL / JEM-100CX II #03-03

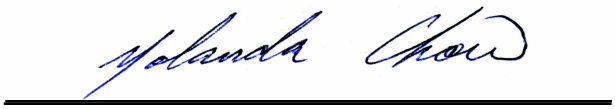
The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods . The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

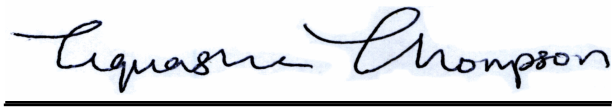
Sample Receipt Date: 6/1/2016
Sample Receipt Time: 12:07 PM
Analysis Completed Date: 6/5/2016
Analysis Completed Time: 12:03 AM

Analyst(s):

Deen Liang PLM NYS 198.1 Friable (9)



Yolanda Chow PLM NYS 198.1 Friable (9)



Tiquasha Thompson PLM NYS 198.6 NOB (2)

Gerald Iannuzzi TEM NYS 198.4 NOB (2)

Samples reviewed and approved by:

James Hall, Laboratory Manager
or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non -asbestos containing.
All samples examined for the presence of vermiculite when analyzed via NYS 198.1.
-NYS Guidelines for Vermiculite containing samples are available at http ://www.wadsworth.org/labcert/elapcert/forms/ VermiculiteInterimGuidance_Rev070913.pdf EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations . Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation .

Samples analyzed by EMSL Analytical, Inc. New York, NY NYS ELAP 11506

Initial Report From: 06/05/2016 11:54:14

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800)220-3675 / (856)786-5974
http://www.EMSL.com cinnaslab@EMSL.com

EMSL Order #: **041615237**
Customer ID: **LBAP78**
Customer PO: **Not Available**

Attn: **Craig Napolitano**
Louis Berger & Associates, PC
48 Wall St.
New York, NY 10005

Phone: **212-612-7900**
Fax: **Not Available**

Project: **3001329.00 / WSPD / White Plains High School / 550 North St, White Plains, NY / Throughout /**

Date Collected: **05/31/2016**
Date Received: **06/08/2016**
Date Analyzed: **06/14/2016**

Report Date: 06/14/2016 *Revision:* R0

Asbestos Analysis by NYS ELAP Method 198.8
PLM Analysis for Asbestos in Sprayed-On Fireproofing Containing Vermiculite (SOF-V) Bulk Samples

Lab Number	*Client Sample Identification*	Appearance	Percentage Matrix Material	Percentage non-Asbestos Fibers	Chrysotile Percentage	Amphibole Percentage	Total Percentage
041615237-0001	15	Tan Non-Fibrous Homogeneous	100	0.0	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
041615237-0002	16	Tan Non-Fibrous Homogeneous	100	0.0	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
041615237-0003	17	Tan Non-Fibrous Homogeneous	100	0.0	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected

Report Date	Report Revision	Revision Comments
06/14/2016	R0	Initial Report

Benjamin Ellis, Laboratory Manager
or other approved signatory
NYS ELAP 10872

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
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http://www.EMSL.com cinnasblab@EMSL.com

EMSL Order #: **041615237**
Customer ID: **LBAP78**
Customer PO: **Not Available**

Asbestos Analysis of NYS ELAP Method 198.8
PLM analysis for Asbestos in Sprayed-On Fireproofing Containing Vermiculite (SOF-V) Bulk Samples
Bench Sheet

EMSL Sample ID 041615237-0001 **Crucible ID:** X12-1

	Analyst	Date
Gravimetric Prep	CM	6/11/2016
Chrysotile Analysis	SRC	6/13/2016
Centrifugation Date	CM	6/14/2016
Amphibole Analysis	AC	6/14/2016

Stereoscopic			
Color	Tan	**Stereoscopic % Asbestos**	ND
Texture	Non-Fibrous		
Homogeneity	Homogeneous	**Vermiculite Detected**	Yes

Initial Weights*	
Weight of Crucible	25.5726
Weight of Crucible and Sub Sample	28.9614
Weight of Sub-Sample	3.3888
Ashing	
Weight of Crucible & Ash	28.3534
Weight of Ash	2.7808
Weight Loss During Ashing	0.6080
Weight Percent Organic and Water	17.9415
Acid Treatment/ Flotation	
Weight of Dish for Floats	46.2484
Weight of Dish & Floats	46.2484
Weight of Floats	0.0000
Weight Percent Floats	0.0000
Weight of Dish & Filter for Residue	8.4121
Weight of Dish & Filter & Residue	8.6471
Weight of Residue	0.2350
Weight Loss During Acid/Flotation Treatment	2.5458
Weight Percent Acid-Soluble/Float Materials	75.1239
Weight Percent Residue	6.9346

Non-Asbestos Fiber	Optical Property	Visual %	Calc %
			0
			0

Chrysotile Identification Optical Properties							Temperature (C°)	20.4
⊥ RI	∥RI	Morphology	Sign	Pleochorism	Birefringence	Fiber Color	Extinction	

Amphibole Identification Optical Properties							Temperature (C°)	22.3
⊥ RI	∥RI	Morphology	Sign	Pleochorism	Birefringence	Fiber Color	Extinction	

PLM Examination of Residue (Chrysotile)	Analyzed	PTCT	Chrysotile	Non-Empty	PTCT:	Chrysotile	Non-Empty	Trace Detected?
Number of Occupied Points	400	Slide 1:	0	50	Slide 5:	0	50	☐ None
Number of Chrysotile Points	0	Slide 2:	0	50	Slide 6:	0	50	*Check box if yes*
Percent Chrysotile by PTCT	0.00	Slide 3:	0	50	Slide 7:	0	50	
(if greater than 1% no further analysis needed)	0.0000	Slide 4:	0	50	Slide 8:	0	50	

Heavy Liquid Centrifugation	
Weight of Dish & Filter & Balance of Residue (Post Chrysotile Analysis)	8.6276
Weight of Balance of Residue	0.2155
Weight of Dish & Filter for Centrifugate	8.4496
Weight of Dish & Filter & Centrifugate	8.4532
Weight of Centrifugate	0.0036
Weight Percent Centrifugate	0.1158

PLM Examination of Centrifugate (Amphibole)	Analyzed	PTCT	Amphibole	Non-Empty	PTCT	Amphibole	Non-Empty	Trace Detected?
Number of Occupied Points	400	Slide 1:	0	50	Slide 5:	0	50	☐ None
Number of Amphibole Points	0	Slide 2:	0	50	Slide 6:	0	50	*Check box if yes*
Percent Amphibole by PTCT	0.00	Slide 3:	0	50	Slide 7:	0	50	
Percent Amphibole in Sample	0.0000	Slide 4:	0	50	Slide 8:	0	50	

Percent of Total Asbestos in Sample	**0.0000**

** All Weights in grams*

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EMSL Order #: **041615237**
Customer ID: **LBAP78**
Customer PO: **Not Available**

Asbestos Analysis of NYS ELAP Method 198.8
PLM analysis for Asbestos in Sprayed-On Fireproofing Containing Vermiculite (SOF-V) Bulk Samples
Bench Sheet

EMSL Sample ID 041615237-0002 **Crucible ID:** X12-2

	Analyst	Date
Gravimetric Prep	CM	6/11/2016
Chrysotile Analysis	SRC	6/13/2016
Centrifugation Date	CM	6/14/2016
Amphibole Analysis	AC	6/14/2016

Stereoscopic			
Color	Tan	**Stereoscopic % Asbestos**	ND
Texture	Non-Fibrous		
Homogeneity	Homogeneous	**Vermiculite Detected**	Yes

Initial Weights*	
Weight of Crucible	26.8375
Weight of Crucible and Sub Sample	29.8786
Weight of Sub-Sample	3.0411
Ashing	
Weight of Crucible & Ash	29.3450
Weight of Ash	2.5075
Weight Loss During Ashing	0.5336
Weight Percent Organic and Water	17.5463
Acid Treatment/ Flotation	
Weight of Dish for Floats	44.2598
Weight of Dish & Floats	44.2598
Weight of Floats	0.0000
Weight Percent Floats	0.0000
Weight of Dish & Filter for Residue	8.4919
Weight of Dish & Filter & Residue	8.7464
Weight of Residue	0.2545
Weight Loss During Acid/Flotation Treatment	2.2530
Weight Percent Acid-Soluble/Float Materials	74.0850
Weight Percent Residue	8.3687

Non-Asbestos Fiber	Optical Property	Visual %	Calc %
			0
			0

Chrysotile Identification Optical Properties — Temperature (C°) 20.4

⊥ RI	IIRI	Morphology	Sign	Pleochorism	Birefringence	Fiber Color	Extinction

Amphibole Identification Optical Properties — Temperature (C°) 22.1

⊥ RI	IIRI	Morphology	Sign	Pleochorism	Birefringence	Fiber Color	Extinction

PLM Examination of Residue (Chrysotile)	Analyzed
Number of Occupied Points	400
Number of Chrysotile Points	0
Percent Chrysotile by PTCT	0.00
(if greater than 1% no further analysis needed)	0.0000

PTCT	Chrysotile	Non-Empty	PTCT:	Chrysotile	Non-Empty	Trace Detected?
Slide 1:	0	50	Slide 5:	0	50	☐ None
Slide 2:	0	50	Slide 6:	0	50	*Check box if yes*
Slide 3:	0	50	Slide 7:	0	50	
Slide 4:	0	50	Slide 8:	0	50	

Heavy Liquid Centrifugation	
Weight of Dish & Filter & Balance of Residue (Post Chrysotile Analysis)	8.7273
Weight of Balance of Residue	0.2354
Weight of Dish & Filter for Centrifugate	8.3733
Weight of Dish & Filter & Centrifugate	8.3784
Weight of Centrifugate	0.0051
Weight Percent Centrifugate	0.1813

PLM Examination of Centrifugate (Amphibole)	Analyzed
Number of Occupied Points	400
Number of Amphibole Points	0
Percent Amphibole by PTCT	0.00
Percent Amphibole in Sample	0.0000

PTCT	Amphibole	Non-Empty	PTCT	Amphibole	Non-Empty	Trace Detected?
Slide 1:	0	50	Slide 5:	0	50	☐ None
Slide 2:	0	50	Slide 6:	0	50	*Check box if yes*
Slide 3:	0	50	Slide 7:	0	50	
Slide 4:	0	50	Slide 8:	0	50	

Percent of Total Asbestos in Sample	**0.0000**

** All Weights in grams*

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800)220-3675 / (856)786-5974
http://www.EMSL.com cinnasblab@EMSL.com

EMSL Order #: **041615237**
Customer ID: **LBAP78**
Customer PO: **Not Available**

Asbestos Analysis of NYS ELAP Method 198.8
PLM analysis for Asbestos in Sprayed-On Fireproofing Containing Vermiculite (SOF-V) Bulk Samples
Bench Sheet

EMSL Sample ID 041615237-0003 **Crucible ID:** X12-3

	Analyst	Date
Gravimetric Prep	CM	6/11/2016
Chrysotile Analysis	SRC	6/13/2016
Centrifugation Date	CM	6/14/2016
Amphibole Analysis	AC	6/14/2016

Stereoscopic			
Color	Tan	**Stereoscopic % Asbestos**	ND
Texture	Non-Fibrous		
Homogeneity	Homogeneous	**Vermiculite Detected**	**Yes**

Initial Weights*	
Weight of Crucible	28.0569
Weight of Crucible and Sub Sample	31.4732
Weight of Sub-Sample	3.4163
Ashing	
Weight of Crucible & Ash	30.7953
Weight of Ash	2.7384
Weight Loss During Ashing	0.6779
Weight Percent Organic and Water	19.8431
Acid Treatment/ Flotation	
Weight of Dish for Floats	40.6006
Weight of Dish & Floats	40.6006
Weight of Floats	0.0000
Weight Percent Floats	0.0000
Weight of Dish & Filter for Residue	8.4779
Weight of Dish & Filter & Residue	8.6754
Weight of Residue	0.1975
Weight Loss During Acid/Flotation Treatment	2.5409
Weight Percent Acid-Soluble/Float Materials	74.3758
Weight Percent Residue	5.7811

Non-Asbestos Fiber	Optical Property	Visual %	Calc %
			0
			0

Chrysotile Identification Optical Properties							Temperature (C°)	20.4
	⊥ RI	∥RI	Morphology	Sign	Pleochorism	Birefringence	Fiber Color	Extinction

Amphibole Identification Optical Properties							Temperature (C°)	22.2
	⊥ RI	∥RI	Morphology	Sign	Pleochorism	Birefringence	Fiber Color	Extinction

PLM Examination of Residue (Chrysotile)	Analyzed	PTCT	Chrysotile	Non-Empty	PTCT:	Chrysotile	Non-Empty	Trace Detected?
Number of Occupied Points	400	Slide 1:	0	50	Slide 5:	0	50	☐ **None**
Number of Chrysotile Points	0	Slide 2:	0	50	Slide 6:	0	50	*Check box if yes*
Percent Chrysotile by PTCT	0.00	Slide 3:	0	50	Slide 7:	0	50	
(if greater than 1% no further analysis needed)	0.0000	Slide 4:	0	50	Slide 8:	0	50	

Heavy Liquid Centrifugation	
Weight of Dish & Filter & Balance of Residue (Post Chrysotile Analysis)	8.6563
Weight of Balance of Residue	0.1784
Weight of Dish & Filter for Centrifugate	8.3674
Weight of Dish & Filter & Centrifugate	8.3716
Weight of Centrifugate	0.0042
Weight Percent Centrifugate	0.1361

PLM Examination of Centrifugate (Amphibole)	Analyzed	PTCT	Amphibole	Non-Empty	PTCT	Amphibole	Non-Empty	Trace Detected?
Number of Occupied Points	400	Slide 1:	0	50	Slide 5:	0	50	☐ **None**
Number of Amphibole Points	0	Slide 2:	0	50	Slide 6:	0	50	*Check box if yes*
Percent Amphibole by PTCT	0.00	Slide 3:	0	50	Slide 7:	0	50	
Percent Amphibole in Sample	0.0000	Slide 4:	0	50	Slide 8:	0	50	

Percent of Total Asbestos in Sample	**0.0000**

** All Weights in grams*

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800)220-3675 / (856)786-5974
http://www.EMSL.com cinnasblab@EMSL.com

EMSL Order #:	**041615237**
Customer ID:	**LBAP78**
Customer PO:	**Not Available**

Attn: **Craig Napolitano**
Louis Berger & Associates, PC
48 Wall St.
New York, NY 10005

Phone: **212-612-7900**
Fax: **Not Available**

Project: **3001329.00 / WSPD / White Plains High School / 550 North St,**

Date Collected: **05/31/2016**
Date Received **06/08/2016**
Date Analyzed: **06/14/2016**

Report Date	Report Revision	Revision Comments
06/14/2016	R0	Initial Report

Benjamin Ellis, Laboratory Manager

or other approved signatory

NYS ELAP 10872

About us

EMSL Analytical, Inc. offers a full line of analytical solutions for over 30 years across North America. For more information about our nationally accredited locations, vast line of testing services, and our food safety solutions please visit www.EMSL.com or call (800) 220-3675.

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LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 3100/329.06

CLIENT: WPSD

031615256

LOCATION(S) SURVEYED: Throughout

PROPOSED PROJECT: Building upgrades

DATE(S) OF INSPECTION: 5/31/16

Inspector(s) M.G., D.K.

PROJECT SITE: WP45, 550 North St, White Plains, NY

Project Manager: C. Hepotitano

LOUIS BERGER
TELEPHONE N0. : (212) 612-7900 **FAX N0.: (212) 363-4341**
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
F	12	Canvas Wrap around Fiberglass Pipe & Fittings insul. (gray)	Field House, Mechanical Rm.		
	13				
	14				
G	15	Wall Plaster (brown coat)	Bldg D, Stage Storage Rm		Stop at 1st positive
	16				
	17				
H	18	Wall Plaster (white coat)			
	19				
	20				

EMSL MANHATTAN LAB RECEIVED 16 JUN -1 PM 12:07

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		AM/PM	Relinquished by: (print)	(Sign)		AM/PM	Relinquished by: (print)	(Sign)		AM/PM
Received by: (print)	(Sign)		AM/PM	Received by: (print)	(Sign)		AM/PM	Received by: (print)	(Sign)		AM/PM

DL 6/4/16 12:15A

YC 6/5/16 10:28AM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

OrderID: 031615256

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

031615256

LB PROJ 30013329.00
CLIENT: WPSD

LOCATION(S) SURVEYED: Throughout
PROPOSED PROJECT: Building Upgrades
DATE(S) OF INSPECTION: 5/31/16
Inspector(s) M.G., D.K.

PROJECT SITE: WPHS, 550 North St., White Plains, NY
Project Manager: C. Napolitano

LOUIS BERGER
TELEPHONE N0. : (212) 612-7900 FAX N0.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
A	1	Exterior Brick Mortar (Grey)	Bldg A — outside Server Rm A004		
↓	2	↓	" " — at location of new Generator		
B	3	Textrum Ceiling Panels (grey)	Bldg E — Auxiliary Gym		
↓	4	↓	↓ ↓		
C	5	Asphalt (black)	Field House, North side		
↓	6	↓	↓ , South side		
D	7	Cinderblock Mortar (grey)	Field House, Mechanical Room		
↓	8	↓	↓ , North side		
E	9	Ceiling Scratch Coat (grey)	Field House, Mechanical Room		
↓	10	↓	↓ ↓		
↓	11	↓	↓ ↓		

EMSL MANHATTAN LAB
RECEIVED
16 JUN -1 PM 12:07

CHAIN OF CUSTODY

Relinquished by: (print) Michael Gelfand	(Sign)	6/1/16	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
Received by: (print) Timothy Harvey	(Sign)	6/1/16	12:07 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ /	AM/PM

YC 6/5/16 10:28AM DL 6/4/16 12:15pm

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

LOUIS BERGER — ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PAGE 1 OF 2

LB PROJ 3001329.00
CLIENT: WPSD
031615256

LOCATION(S) SURVEYED: Throughout
PROPOSED PROJECT: Building Upgrades
DATE(S) OF INSPECTION: 5/31/16
Inspector(s) M.G., D.K.

PROJECT SITE: WPHS, 550 North St., White Plains, NY
Project Manager: C. Napolitano

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
A	1	Exterior Brick Mortar (Gray)	Bldg A — outside Server Rm Addn		
↓	2	↓	" " — at location of new Generator		
B	3	Texture Ceiling Panels (gray)	Bldg E — Auxiliary Gym		
↓	4	↓	↓		
C	5	Asphalt (black)	Field House, North side		
↓	6	↓	, South side		
D	7	Cinderblock Mortar (grey)	Field House, Mechanical Room		
↓	8	↓	, North side		
E	9	Ceiling scratch Coat (Grey)	Field House, Mechanical Room		
↓	10	↓	↓		
↓	11	↓	↓		

EMSL MANHATTAN LAB
RECEIVED
16 JUN -1 PM 12:07

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
Michael Gelfand		6/1/16	AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Matthew Wiley		6/1/16	12:07 AM/PM			/ /	AM/PM			/ /	AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

Thomas Grayson 6/1/16 12:27AM
6/1/16

LOUIS BERGER — ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 300132900
CLIENT: WPSD

031615256

LOCATION(S) SURVEYED: Throughout
PROPOSED PROJECT: Building upgrades
DATE(S) OF INSPECTION: 5/31/16
Inspector(s) M.G., D.K.

PROJECT SITE: WP45, 550 North St, White Plains, NY
Project Manager: C. Napolitano

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
F	12	Canvas Wrap around Fiberglass Pipe & Fittings insul. (gray)	Field House, Mechanical Rm.		
	13				
	14				
G	15	Wall Plaster (brown coat)	Bldg D, Stage Storage Rm		Stop at 1st positive
	16				
	17				
H	18	Wall Plaster (white coat)			
	19				
	20				

EMSL MANHATTAN LAB RECEIVED
6 JUN -1 PM 12:07

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)	Date	AM/PM	Relinquished by: (print)	(Sign)	Date	AM/PM	Relinquished by: (print)	(Sign)	Date	AM/PM
Michael Cleland		5/31/16				/ /				/ /	
Received by: (print)	(Sign)	Date	AM/PM	Received by: (print)	(Sign)	Date	AM/PM	Received by: (print)	(Sign)	Date	AM/PM
Yong Guang Wang		6/1/16	12:07			/ /				/ /	

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

Miguel Rongson 6/1/16 12:27AM
6/1/16

OrderID: 031615256

APPENDIX C:
LEAD XRF SHOT RESULTS

XRF Testing Data Report

Project Number	3001329
Testing Location	White Plains High School
Inspector	D.Kirnossenko, M. Gelfand
Date	May 31, 2016
XRF Model	RMD LPA-1
XRF Serial Number	3675

Test Number	Room	Component Name	Color	Condition	Substrate	Location (Wall/Side)	[Pb] (mg/cm^2)	Result
1		**OFFICE CALIBRATION @ 1.0**	**5/31/2016 10:30**				**1.1**	**POS**
2		**OFFICE CALIBRATION @ 1.0**					**1.1**	**POS**
3		**OFFICE CALIBRATION @ 1.0**					**1.1**	**POS**
4		OFFICE CALIBRATION @ 0.0					-0.1	NEG
5		OFFICE CALIBRATION @ 0.0					0	NEG
6		OFFICE CALIBRATION @ 0.0					0	NEG
7	Bldg. A, Room A004	WALL	Beige	Fair	Cinderblock	Wall A	-0.3	NEG
8	Bldg. A, Room A004	WALL	Beige	Fair	Cinderblock	Wall B	-0.3	NEG
9	Bldg. A, Room A004	WALL	Beige	Fair	Cinderblock	Wall C	-0.3	NEG
10	Bldg. A, Room A004	COLUMN	Beige	Fair	Concrete	Wall C	-0.3	NEG
11	Bldg. A, Room A004	WALL	Beige	Fair	Cinderblock	Wall D	-0.4	NEG
12	Bldg. A, Room A004	CEILING	Beige	Fair	Concrete	Ceiling	-0.5	NEG
13	Bldg. A, Room A004	DUCT	Beige	Fair	Metal	Ceiling	-0.1	NEG
14	Bldg. A, Room A003	WALL	Beige	Fair	Cinderblock	Wall A	-0.5	NEG
15	Bldg. A, Room A003	WALL	Beige	Fair	Cinderblock	Wall B	-0.4	NEG
16	Bldg. A, Room A003	WALL	Beige	Fair	Cinderblock	Wall C	-0.3	NEG
17	Bldg. A, Room A003	COLUMN	Beige	Fair	Concrete	Wall C	-0.5	NEG
18	Bldg. A, Room A003	WALL	Beige	Fair	Cinderblock	Wall D	-0.5	NEG
19	Bldg. A, Room A003	CEILING	Beige	Fair	Concrete	Ceiling	-0.5	NEG
20	Bldg. A, Room A003	DOOR	Varnish	Fair	Wood	Wall A	-0.3	NEG
21	Bldg. A, Room A003	DOOR TRANSOM	Varnish	Fair	Wood	Wall A	-0.3	NEG

Inspector:

Test Number	Room	Component Name	Color	Condition	Substrate	Location (Wall/Side)	[Pb] (mg/cm^2)	Result
22	Bldg. A, Room A003	DUCT	Beige	Fair	Metal	Ceiling	0	NEG
23	Bldg. A, Room A004	DOOR	Varnish	Fair	Wood	Wall A	-0.2	NEG
24	Bldg. A, Room A004	DOOR TRANSOM	Varnish	Fair	Wood	Wall A	-0.3	NEG
25	Bldg. A, Corridor by Room A003, A003	WALL	Beige	Fair	Cinderblock	Wall B	-0.2	NEG
26	Bldg. A, Corridor by Room A003, A003	WALL	Gray	Fair	Cinderblock	Wall D	-0.5	NEG
27	Bldg. A, Corridor by Room A003, A003	WALL	Beige	Fair	Concrete	Wall B	-0.2	NEG
28	Bldg. A, Corridor by Room A003, A003	WALL	Gray	Fair	Concrete	Wall D	-0.1	NEG
29	Bldg. A, Corridor by Room A003, A003	DUCT	Beige	Fair	Metal	Ceiling	-0.2	NEG
30	Bldg. A, Corridor by Room A003, A003	CEILING	Beige	Fair	Concrete	Ceiling	-0.3	NEG
31	Bldg. A, Room A008	WALL	Beige	Fair	Cinderblock	Wall A	-0.3	NEG
32	Bldg. A, Room A008	WALL	Beige	Fair	Cinderblock	Wall B	-0.2	NEG
33	Bldg. A, Room A008	WALL	Beige	Fair	Cinderblock	Wall C	-0.2	NEG
34	Bldg. A, Room A008	COLUMN	Beige	Fair	Concrete	Wall C	-0.5	NEG
35	Bldg. A, Room A008	WALL	Beige	Fair	Cinderblock	Wall D	-0.2	NEG
36	Bldg. A, Room A008	DUCT	Beige	Fair	Metal	Wall D	-0.2	NEG
37	Bldg. A, Room A008	DUCT	Beige	Fair	Metal	Ceiling	-0.1	NEG
38	Bldg. A, Room A008	CEILING	Beige	Fair	Concrete	Ceiling	-0.3	NEG
39	Bldg. A, Room A008	WALL	White	Fair	Cinderblock	Wall A	-0.5	NEG
40	Bldg. A, Room A008	WALL	White	Fair	Cinderblock	Wall B	-0.2	NEG
41	Bldg. A, Room A008	DOOR	Varnish	Fair	Wood	Wall A	-0.3	NEG
42	Bldg. E, Auxilary Gym	WALL	Beige	Fair	Cinderblock	Wall A	-0.3	NEG
43	Bldg. E, Auxilary Gym	WALL	Red	Fair	Cinderblock	Wall A	-0.3	NEG
44	Bldg. E, Auxilary Gym	WALL	Black	Fair	Cinderblock	Wall A	-0.6	NEG
45	Bldg. E, Auxilary Gym	WALL	Beige	Fair	Cinderblock	Wall B	-0.3	NEG
46	Bldg. E, Auxilary Gym	WALL	Red	Fair	Cinderblock	Wall B	-0.6	NEG
47	Bldg. E, Auxilary Gym	WALL	Black	Fair	Cinderblock	Wall B	-0.5	NEG
48	Bldg. E, Auxilary Gym	ELECTRICAL CONDUIT	Beige	Fair	Metal	Wall B	0	NEG

Inspector:

Test Number	Room	Component Name	Color	Condition	Substrate	Location (Wall/Side)	[Pb] (mg/cm^2)	Result
49	Bldg. E, Auxilary Gym	WALL	Beige	Fair	Cinderblock	Wall C	-0.4	NEG
50	Bldg. E, Auxilary Gym	WALL	Red	Fair	Cinderblock	Wall C	-0.3	NEG
51	Bldg. E, Auxilary Gym	WALL	Black	Fair	Cinderblock	Wall C	-0.5	NEG
52	Bldg. E, Auxilary Gym	WALL	Beige	Fair	Cinderblock	Wall D	-0.4	NEG
53	Bldg. E, Auxilary Gym	CHAIR RAIL	Red	Fair	Wood	Wall C	-0.2	NEG
54	Bldg. E, Room E216	WALL	Beige	Fair	Cinderblock	Wall A	-0.3	NEG
55	Bldg. E, Room E216	WALL	Beige	Fair	Sheetrock	Wall A	-0.4	NEG
56	**Bldg. E, Corridor by Auxilary Gym**	**WALL**	**Beige**	**Fair**	**Cinderblock**	**Wall B**	**1**	**POS**
57	Bldg. E, Corridor by Auxilary Gym	WALL	Beige	Fair	Cinderblock	Wall D	-0.2	NEG
58	Bldg. G, Ground Floor Corridor	WALL	Beige	Fair	Cinderblock	Wall B	-0.3	NEG
59	Bldg. D, Ground Floor Corridor	WALL	Beige	Fair	Cinderblock	Wall B	-0.4	NEG
60	Bldg. D, Ground Floor Corridor	COLUMN	Beige	Fair	Concrete	Wall D	-0.5	NEG
61	Bldg. D, Room 102A (Stage Storage)	WALL	Blue	Fair	Plaster	Wall B	-0.2	NEG
62	Field House, Boiler Room	WALL	Beige	Fair	Cinderblock	Wall B	-0.2	NEG
63	Field House, Locker Room	WALL	Beige	Fair	Cinderblock	Wall B	-0.3	NEG
64	Field House, Locker Room	WALL	Orange	Fair	Cinderblock	Wall B	-0.2	NEG
65	Field House, Locker Room	WALL	Black	Fair	Cinderblock	Wall B	-0.3	NEG
66	Field House, Boiler Room	FLOOR	Gray	Fair	Concrete	Room Center	-0.3	NEG
67	Field House, Boiler Room	OIL TANK	Green	Fair	Metal	Wall A	-0.2	NEG
68	Field House, Exterior	WALL	Beige	Fair	Cinderblock	North	-0.2	NEG
69		**CALIBRATE @ 1.0**	5/31/2016 13:45				1	**POS**
70		**CALIBRATE @ 1.0**					1.1	**POS**
71		**CALIBRATE @ 1.0**					1.1	**POS**

Inspector:

LOUIS BERGER & ASSOC., PC

XRF CALIBRATION CHECK FORM

PAGE 1 OF 1

PROJ. NO.:	3001329	DATE:	5/31/16
PROJECT NAME:	White Plains HS & Highlands MS	INSPECTOR NAME:	D. Kimossenko; M. Gelfand
CLIENT:	White Plains School District	INSPECTOR SIGNATURE:	[signature]
SITE:	WPHS	PROJ. MANAGER:	C. Napolitano

LOUIS BERGER & ASSOC., PC
TELEPHONE # : (212) 612-7900
FAX #: (212) 425-1618
ADDRESS: 48 Wall Street 16th Floor
New York, NY 10005

XRF MAKE/MODEL: RMD LPA-1 (Serial#3675)

NOTES:

CALIBRATION CHECK – FIELD-START

1.0 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: 1030	TEST #	1	2	3	
	XRF READING	1.1	1.1	1.1	

CALIBRATION CHECK – FIELD-START

0.0 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: ______	TEST #	4	5	6	
	XRF READING	-0.1	-0.0	-0.0	

CALIBRATION CHECK – FIELD-END/2-HR (circle one) [FIELD-END circled]

1.0 mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: 1345	TEST #	69	70	71	
	XRF READING	1.0	1.1	1.1	

CALIBRATION CHECK – FIELD-END/2-HR (circle one)

______ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: ______	TEST #				
	XRF READING				

CALIBRATION CHECK – FIELD-END/2-HR (circle one)

______ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: ______	TEST #				
	XRF READING				

CALIBRATION CHECK – FIELD-END/2-HR (circle one)

______ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: ______	TEST #				
	XRF READING				

CALIBRATION CHECK – FIELD-END/2-HR (circle one)

______ mg/cm² Calibration Block		FIRST READING	SECOND READING	THIRD READING	AVERAGE
CALIBRATION TIME: ______	TEST #				
	XRF READING				

Louis Berger & Assoc., PC
48 Wall St., 16th Fl.
New York, NY 10005
Tel. 212-612-7900 Fax. 212-363-4341

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PAGE 1 OF ___

PROJECT NO.: 3001329
PROJECT NAME: White Plains HS & Highlands MS
XRF SERIAL #: RMD-3675
CLIENT: White Plains HS & Highlands MS
PROJECT LOCATION: WPHS
INSPECTOR(S): D. Kimossenko; M. Gelfand
PROJ. MANAGER:
INSPECTION DATE: 5/31/16

SPACE CHARACTERISTICS:
FLOOR #: _____ ROOM #: _____ ROOM NAME: _____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION (I/F/P)	COMPONENT	WALL/SIDE DESIGN.	SIDE (L/C/R)	HEIGHT (L/M/U)	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) (SF)	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
7	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		W	A B C D RM CTR FL CL	BSMT			Rm A004			-0.3
8	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		W	A B C D RM CTR FL CL							-0.3
9	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		W	A B C D RM CTR FL CL							-0.3
10	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		CLG	A B C D RM CTR FL CL							-0.3
11	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		W	A B C D RM CTR FL CL							-0.4
12	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		CL	A B C D RM CTR FL CL							-0.5
13	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		Duct	A B C D RM CTR FL CL							-0.1
14	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		W	A B C D RM CTR FL CL			Rm A003				-0.5
15	M PL S C CB PG CR / B W V CT G FG / OTHER:			W	A B C D RM CTR FL CL							-0.4
16	M PL S C CB PG CR / B W V CT G FG / OTHER:			W	A B C D RM CTR FL CL							-0.3
17	M PL S C CB PG CR / B W V CT G FG / OTHER:			CLG	A B C D RM CTR FL CL							-0.5
18	M PL S C CB PG CR / B W V CT G FG / OTHER:			W	A B C D RM CTR FL CL							-0.5
19	M PL S C CB PG CR / B W V CT G FG / OTHER:			CL	A B C D RM CTR FL CL							-0.5
20	M PL S C CB PG CR / B W V CT G FG / OTHER:	VARN		DR	A B C D RM CTR FL CL							-0.3
21	M PL S C CB PG CR / B W V CT G FG / OTHER:	VARN		DR TRAN	A B C D RM CTR FL CL							-0.3
22	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		Duct	A B C D RM CTR FL CL							0.0
23	M PL S C CB PG CR / B W V CT G FG / OTHER:	VARN		DR	A B C D RM CTR FL CL			Rm A004				-0.2
24	M PL S C CB PG CR / B W V CT G FG / OTHER:	VARN		DR TRAN	A B C D RM CTR FL CL			Rm A004				-0.3
25	M PL S C CB PG CR / B W V CT G FG / OTHER:	Beige		W	A B C D RM CTR FL CL		Corridor					-0.2
26	M PL S C CB PG CR / B W V CT G FG / OTHER:	GRAY		W	A B C D RM CTR FL CL		Corridor					-0.5

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

Louis Berger & Assoc., PC
48 Wall St., 16th Fl.
New York, NY 10005
Tel. 212-612-7900 Fax. 212-363-4341

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: 3001329
PROJECT NAME: White Plains HS & Highlands MS
XRF SERIAL #: RMD-3675
CLIENT: White Plains HS & Highlands MS
PROJECT LOCATION: WPHS
INSPECTOR(S): D. Kimossenko; M. Gelfand
PROJ. MANAGER:
INSPECTION DATE: 5/31/16

SPACE CHARACTERISTICS:
FLOOR #: ____ ROOM #: ____ ROOM NAME: ____

NOTES:

SAMPLE #	SUBSTRATE	COMPONENT DISCRIPTION: COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
27	M PL S (C) CB PG CR B W V CT G FG OTHER:	beige		W	A B C D RM CTR FL CL		Corridor					-0.2
28	M PL S (C) CB PG CR B W V CT G FG OTHER:	GRAY		W	A B C D RM CTR FL CL		Corridor					-0.1
29	(M) PL S C CB PG CR B W V CT G FG OTHER:	beige		Duct	A B C D RM CTR FL (CL)		Corridor					-0.2
30	M PL S (C) CB PG CR B W V CT G FG OTHER:	beige		CL	A B C D RM CTR FL (CL)		Corridor					-0.3
31	M PL S C (CB) PG CR B W V CT G FG OTHER:	beige		W	(A) B C D RM CTR FL CL		Rm A008					-0.3
32	M PL S C (CB) PG CR B W V CT G FG OTHER:	beige		W	A (B) C D RM CTR FL CL							-0.2
33	M PL S C (CB) PG CR B W V CT G FG OTHER:	beige		W	A B (C) D RM CTR FL CL							-0.2
34	M PL S (C) CB PG CR B W V CT G FG OTHER:	beige		CLM	A B (C) D RM CTR FL CL							-0.5
35	M PL S (C) CB PG CR B W V CT G FG OTHER:	beige		W	A B C (D) RM CTR FL CL							-0.2
36	(M) PL S C CB PG CR B W V CT G FG OTHER:	beige		Duct	A B C (D) RM CTR FL CL							-0.2
37	(M) PL S C CB PG CR B W V CT G FG OTHER:	beige		Duct	A B C D RM CTR FL (CL)							-0.1
38	M PL S (C) CB PG CR B W V CT G FG OTHER:	beige		CL	A B C D RM CTR FL (CL)							-0.3
39	M PL S C (CB) PG CR B W V CT G FG OTHER:	white		W	(A) B C D RM CTR FL CL							-0.5
40	M PL S C (CB) PG CR B W V CT G FG OTHER:	white		W	A (B) C D RM CTR FL CL							-0.2
41	M PL S C CB PG CR B (W) V CT G FG OTHER:	VARN		DR	(A) B C D RM CTR FL CL							-0.3
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							

Side: Left/Center/Right; Height: Lower/Middle/Upper; Substrate: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass ; Condition: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

Louis Berger & Assoc., PC
48 Wall St., 16th Fl.
New York, NY 10005
Tel. 212-612-7900 Fax. 212-363-4341

XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

XRF SERIAL #: RMD-3675

PROJECT NO.: 3001329
PROJECT NAME: White Plains HS & Highlands MS
CLIENT: White Plains HS & Highlands MS
PROJECT LOCATION: WPHS
INSPECTOR(S): D. Kimossenko; M. Gelfand
PROJ. MANAGER:
INSPECTION DATE: 5/31/16

SPACE CHARACTERISTICS:
FLOOR #: _____ ROOM #: _____ ROOM NAME: ____________________

NOTES:

COMPONENT DISCRIPTION

SAMPLE #	SUBSTRATE	COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
42	M PL S C **(CB)** PG CR B W V CT G FG OTHER:	Beige		W	**(A)** B C D RM CTR FL CL		Aux. Gym Bldg C					-0.3
43	M PL S C **(CB)** PG CR B W V CT G FG OTHER:	Red		W	**(A)** B C D RM CTR FL CL							-0.3
44	M PL S C **(CB)** PG CR B W V CT G FG OTHER:	Black		W	**(A)** B C D RM CTR FL CL							-0.6
45	M PL S C **(CB)** PG CR B W V CT G FG OTHER:	Beige		W	A **(B)** C D RM CTR FL CL							-0.3
46	M PL S C **(CB)** PG CR B W V CT G FG OTHER:	Red		W	A **(B)** C D RM CTR FL CL							-0.6
47	M PL S C **(CB)** PG CR B W V CT G FG OTHER:	Black		W	A **(B)** C D RM CTR FL CL							-0.5
48	**(M)** PL S C CB PG CR B W V CT G FG OTHER:	Beige		EC	A **(B)** C D RM CTR FL CL							0.0
49	M PL S C CB PG CR B W V CT G FG OTHER:	Beige		W	A B **(C)** D RM CTR FL CL							-0.4
50	M PL S C CB PG CR B W V CT G FG OTHER:	Red		W	A B **(C)** D RM CTR FL CL							-0.3
51	M PL S C CB PG CR B W V CT G FG OTHER:	Black		W	A B **(C)** D RM CTR FL CL							-0.5
52	M PL S C CB PG CR B W V CT G FG OTHER:	Beige		W	A B C **(D)** RM CTR FL CL							-0.4
53	M PL S C CB PG CR B **(W)** V CT G FG OTHER:	Red		MLD	A B C D RM CTR FL CL							-0.2
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							

Side: Left/Center/Right; **Height**: Lower/Middle/Upper; **Substrate**: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; **Condition**: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

Louis Berger & Assoc., PC 48 Wall St., 16th Fl. New York, NY 10005 Tel. 212-612-7900 Fax. 212-363-4341	**XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY**	PAGE 4 OF ___

PROJECT NO.: 3001329

PROJECT NAME: White Plains HS & Highlands MS

XRF SERIAL #: RMD-3675

CLIENT: White Plains HS & Highlands MS

PROJECT LOCATION: WP HS

INSPECTOR(S): D. Kirnossenko; M. Gelfand

PROJ. MANAGER:

INSPECTION DATE: 5/31/16

SPACE CHARACTERISTICS:

FLOOR #: ______ ROOM #: ______ ROOM NAME: ______________

NOTES:

SAMPLE #	SUBSTRATE	COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
54	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		W	(A) B C D RM CTR FL CL		Rm		E216			-0.3
55	M PL (S) C CB PG CR B W V CT G FG OTHER:	Beige		W	(A) B C D RM CTR FL CL							-0.4
56	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		W	A B C (D) RM CTR FL CL	Corridor	Left		wall		Bldg E	1.0
57	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		W	A B (C) D RM CTR FL CL	Corridor	Right		wall		Bldg E	-0.1
58	M PL (S) C CB PG CR B W V CT G FG OTHER:	Beige		W	A B C D RM CTR FL CL	Corridor			Bldg		G	-0.3
59	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		W	A B C (D) RM CTR FL CL	Corridor			Bldg		D	-0.4
60	M PL S (C) CB PG CR B W V CT G FG OTHER:	Beige		CLM	A B C D RM CTR FL CL	Corridor			Bldg		D	-0.5
61	M (PL) S C CB PG CR B W V CT G FG OTHER:	Blue		W	A (B) C D RM CTR FL CL	Bldg	D		Audit Stage		Store	-0.2
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							

Side: Left/Center/Right; **Height**: Lower/Middle/Upper; **Substrate**: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; **Condition**: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

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48 Wall St., 16th Fl.
New York, NY 10005
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XRF LEAD-BASED PAINT TESTING DATA SHEET/CHAIN OF CUSTODY

PROJECT NO.: 3001329

PROJECT NAME: White Plains HS & Highlands MS

XRF SERIAL #: RMD-3675

CLIENT: White Plains HS & Highlands MS

PROJECT LOCATION: WPHS

INSPECTOR(S): D. Kimossenko; M. Gelfand

PROJ. MANAGER:

INSPECTION DATE:

SPACE CHARACTERISTICS: Field House

FLOOR #: ______ ROOM #: ______ ROOM NAME: ______

NOTES:

SAMPLE #	SUBSTRATE	COLOR	CONDITION [I / F / P]	COMPONENT	WALL/SIDE DESIGN.	SIDE [L/C/R]	HEIGHT [L/M/U]	COMPONENT REPLICANT	QUANTITY (IF POSITIVE) [SF]	PHOTO	NOTES (DETERIORATION TO FRICTION/IMPACT AND/OR MOISTURE?)	XRF READING [mg/cm²]
62	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		W	A B C D RM CTR FL CL	Boiler Rm						-0.2
63	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		W	A B C D RM CTR FL CL	Locker Rm						-0.3
64	M PL S C (CB) PG CR B W V CT G FG OTHER:	Orange		W	A B C D RM CTR FL CL	↓						-0.2
65	M PL S C (CB) PG CR B W V CT G FG OTHER:	Black		W	A B C D RM CTR FL CL	↓						-0.3
66	M PL S (C) CB PG CR B W V CT G FG OTHER:	Gray		FL	A B C D RM CTR (FL) CL	Boiler Rm						-0.3
67	(M) PL S C CB PG CR B W V CT G FG OTHER:	Green		Oil Tank	A B C D RM CTR FL CL	↓						-0.2
68	M PL S C (CB) PG CR B W V CT G FG OTHER:	Beige		exter. W	A B C D RM CTR FL CL	exterior						-0.2
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							
	M PL S C CB PG CR B W V CT G FG OTHER:				A B C D RM CTR FL CL							

Side: Left/Center/Right; **Height**: Lower/Middle/Upper; **Substrate**: M: Metal; PL: Plaster; S: Sheetrock; C: Concrete; CB: Cinder Block; CR: Sinks, Water Closets, etc.; CT: Ceramic Tile; PG: Porcelain-glazed Block; B: Brick; W: Wood; V: Vinyl; FG: Fiberglass; G: Glass; **Condition**: I = Intact; F = Fair; P = Poor; Initial Result: P = Positive; N = Negative;

APPENDIX D:
PCB BULK SAMPLE FIELD DATA SHEETS
WITH CHAIN OF CUSTODY
AND LABORATORY RESULTS
[NOT APPLICABLE]

APPENDIX E:
COMPANY LICENSE, PERSONNEL CERTIFICATIONS AND LABORATORY ACCREDITATIONS

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

Louis Berger & Assoc., P.C.
16th Floor
48 Wall Street

New York, NY 10005

FILE NUMBER: 09-46778
LICENSE NUMBER: 46778
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 07/16/2015
EXPIRATION DATE: 07/31/2016

Duly Authorized Representative – Prakash Saha:

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)


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S
MICHAEL GELFAND
CLASS(EXPIRES)
D INSP(02/17) E MGPL(02/17)
I PD (02/17)
CERT# 98-17113
[redacted]
EXCELSIOR
MUST BE CARRIED ON ASBESTOS PROJECTS

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S

DMITRI KIRNOSSENKO
CLASS(EXPIRES)
C ATEC(08/16) D INSP(08/16)
H PM (08/16) I PD (08/16)

CERT# 07-01720
DMV# [redacted]

MUST BE CARRIED ON ASBESTOS PROJECTS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2017
Issued April 01, 2016

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. JAMES HALL
EMSL ANALYTICAL, INC
307 WEST 38TH STREET
NEW YORK, NY 10018

NY Lab Id No: 11506

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

Sample Preparation Methods

EPA 3050B

Serial No.: 54297

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101048-9

EMSL Analytical, Inc.

New York, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2015-06-04 through 2016-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
307 W. 38th Street
New York, NY 10018
Mr. Jim Hall
Phone: 212-290-0051 Fax: 212-290-0058
Email: jhall@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 101048-9

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA 600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2017
Issued April 01, 2016
Revised April 29, 2016

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MR. PHILLIP M. WORBY
EMSL ANALYTICAL INC
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077

NY Lab Id No: 10872

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

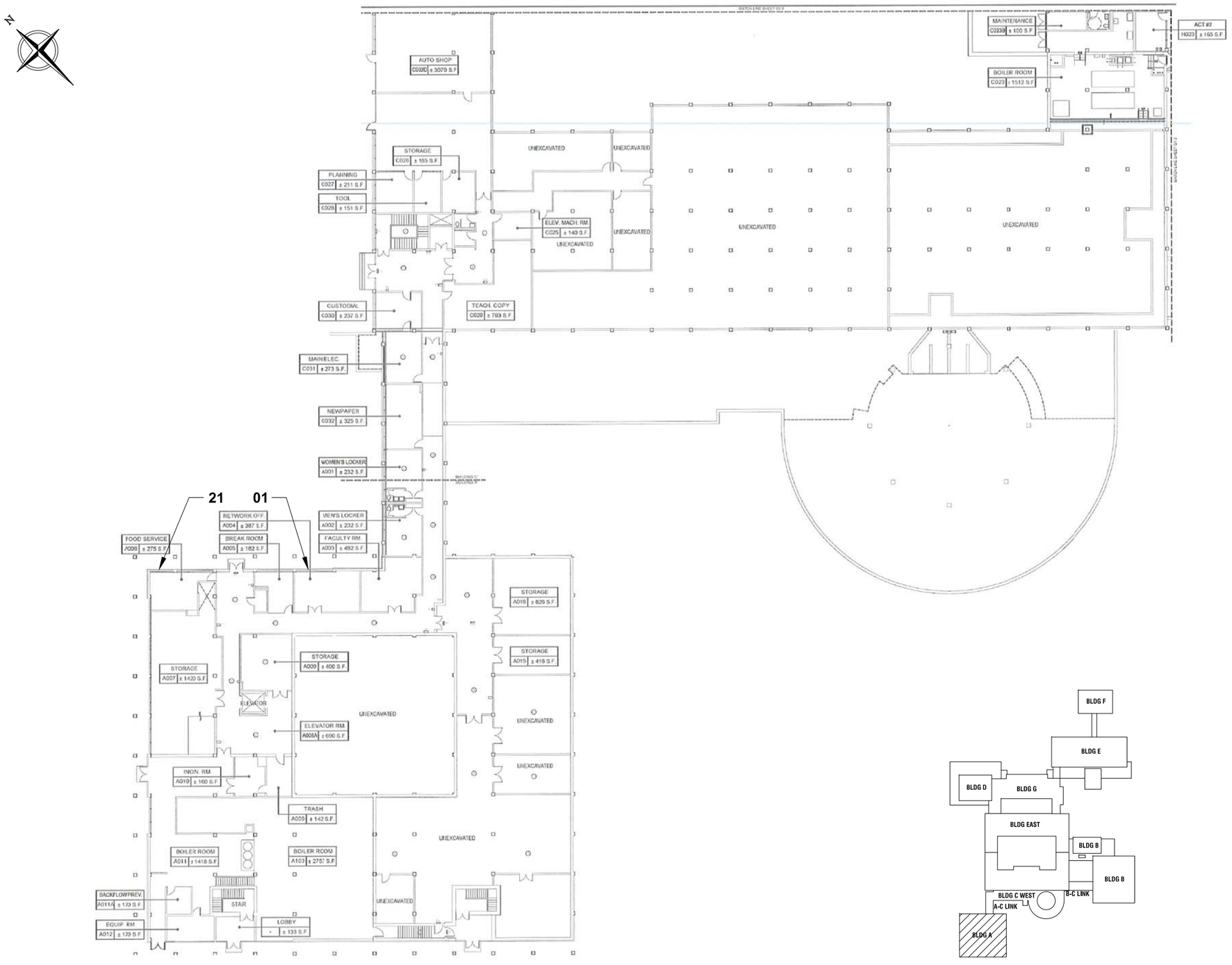
Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 6010C
	EPA 7000B

Sample Preparation Methods

	EPA 3050B

Serial No.: 54763

APPENDIX F:
ASBESTOS BULK SAMPLE LOCATION DRAWINGS



1 BSL001 GROUND FLOOR PLAN - BUILDING "A"
SCALE: NOT TO SCALE

2 BSL001 KEY PLAN
SCALE: NOT TO SCALE

LOCATION PLAN

Louis Berger
48 Wall Street, 16th Floor, New York, New York 10005
TEL. 212.612.7900 FAX 212.363.4341 WWW.louisberger.com

WHITE PLAINS CITY SCHOOL DISTRICT

BUILDING UPGRADES
WHITE PLAINS HIGH SCHOOL AND FIELD STORAGE BUILDING
ELECTRICAL WORK
WHITE PLAINS CITY SCHOOL DISTRICT

580 NORTH STREET
WHITE PLAINS, NY 10605

REVISIONS:

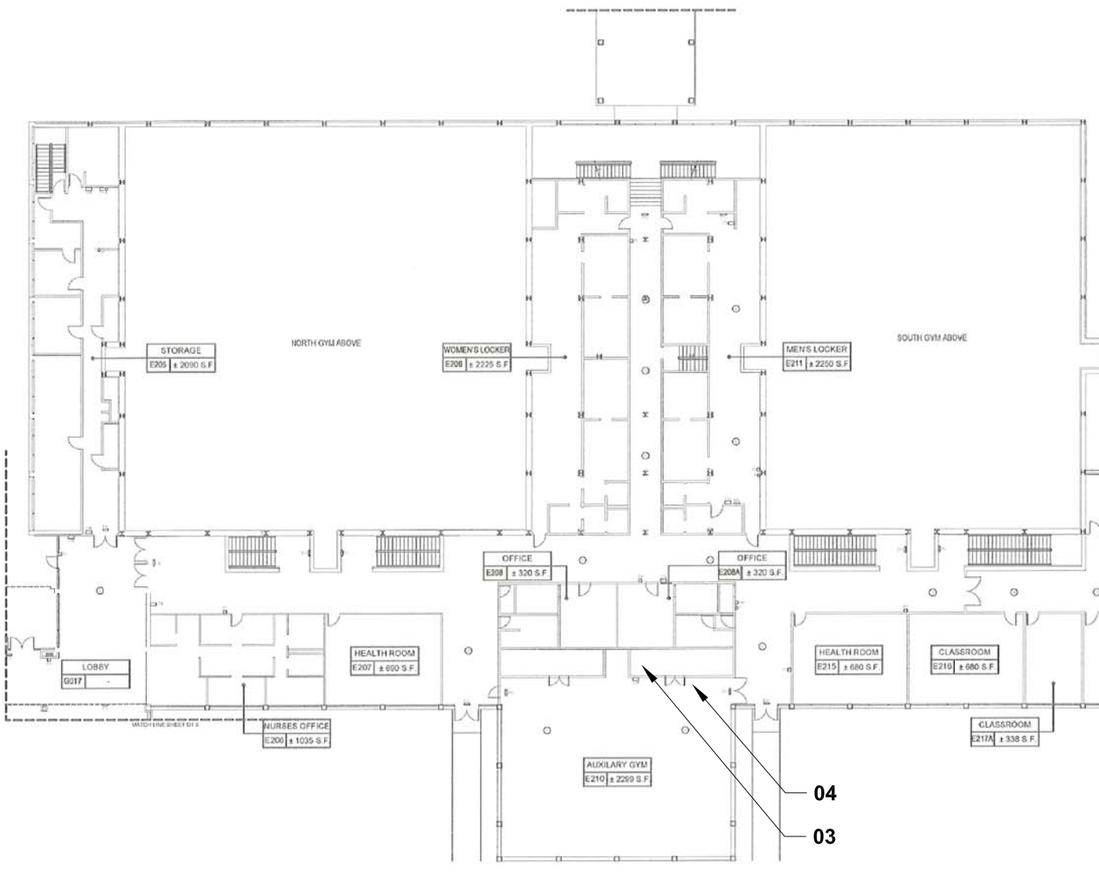
NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:
BULK SAMPLE LOCATIONS
GROUND FLOOR PLAN - BUILDING "A"

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP/INV.: D. KIRNOSSENKO	DATE: 06/10/2016
CERTIFICATE NO: 07-01720	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL001**
	DRAWING NUMBER: 1 OF 3

CONSULTANTS PROJECT #: 3001329



1 BSL002 GROUND FLOOR PLAN - BUILDING "E"

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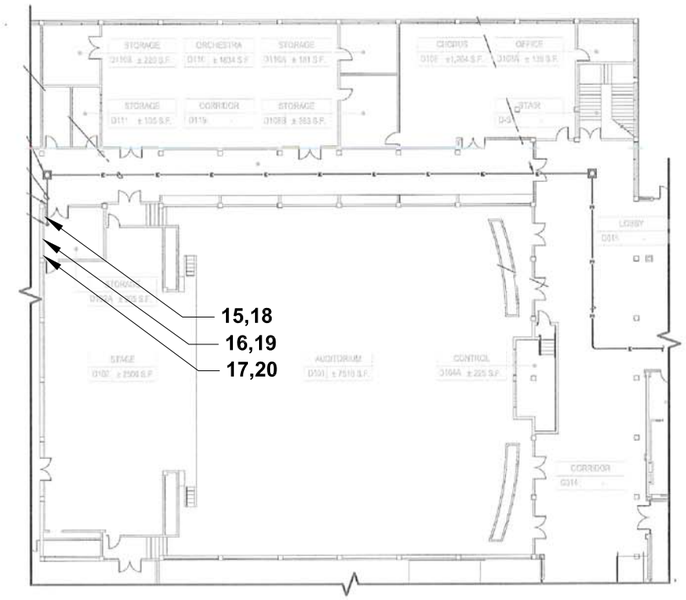

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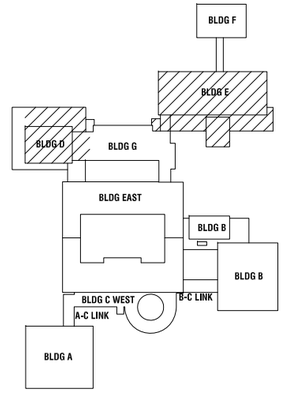


3 BSL002 KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

Louis Berger
48 Wall Street, 16th Floor, New York, New York 10005
TEL. 212.612.7900 FAX 212.363.4341 WWW.louisberger.com

WHITE PLAINS CITY SCHOOL DISTRICT

BUILDING UPGRADES
WHITE PLAINS HIGH SCHOOL AND FIELD STORAGE BUILDING
ELECTRICAL WORK
WHITE PLAINS CITY SCHOOL DISTRICT

580 NORTH STREET
WHITE PLAINS, NY 10605

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

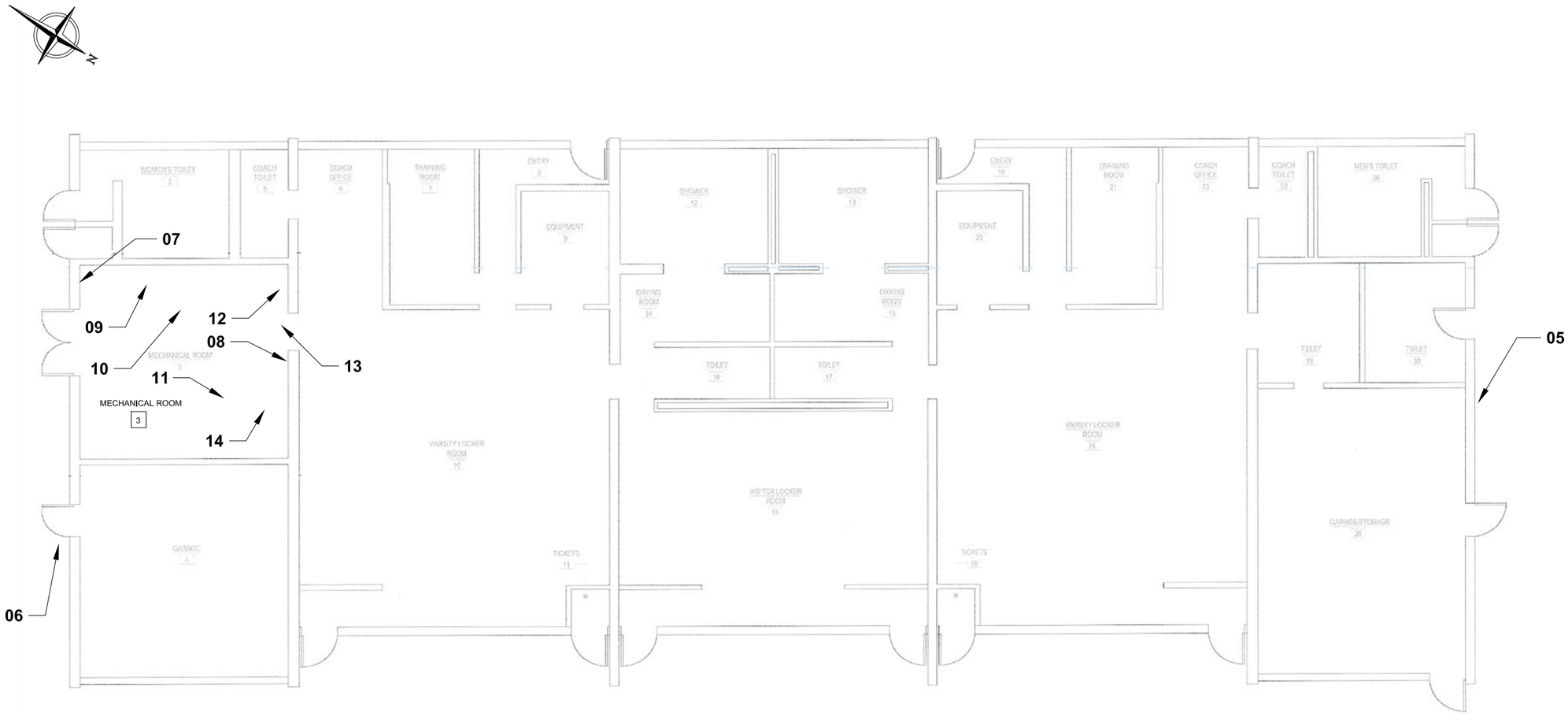
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

BULK SAMPLE LOCATIONS
GROUND FL. PLAN - BLDGS. "E" & "D"

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP/INV.: D. KIRNOSSENKO	DATE: 06/10/2016
CERTIFICATE NO: 07-01720	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL002**
	DRAWING NUMBER: 2 OF 3

CONSULTANTS PROJECT #: 3001329



1 BSL003 **ELECTRICAL FIELD HOUSE PLAN**

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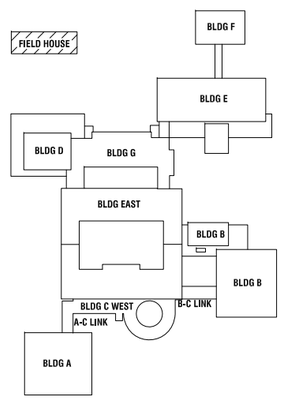

2 BSL003 **KEY PLAN**

SCALE: NOT TO SCALE

LOCATION PLAN

Louis Berger
48 Wall Street, 16th Floor, New York, New York 10005
TEL. 212.612.7900 FAX 212.363.4341 WWW.louisberger.com

WHITE PLAINS CITY SCHOOL DISTRICT

BUILDING UPGRADES
WHITE PLAINS HIGH SCHOOL AND FIELD STORAGE BUILDING
ELECTRICAL WORK
WHITE PLAINS CITY SCHOOL DISTRICT

580 NORTH STREET
WHITE PLAINS, NY 10605

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:
BULK SAMPLE LOCATIONS
ELECTRICAL FIELD HOUSE PLAN

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP/INV.: D. KIRNOSSENKO	DATE: 06/06/2016
CERTIFICATE NO: 07-01720	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL003**
	DRAWING NUMBER: 3 OF 3

CONSULTANTS PROJECT #: 3001329

APPENDIX G:
ASBESTOS CONTAINING MATERIALS LOCATION DRAWINGS
[NOT APPLICABLE]

APPENDIX H:
PHOTOGRAPHIC DOCUMENTATION

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605
PHOTODOCUMENTATION LOG

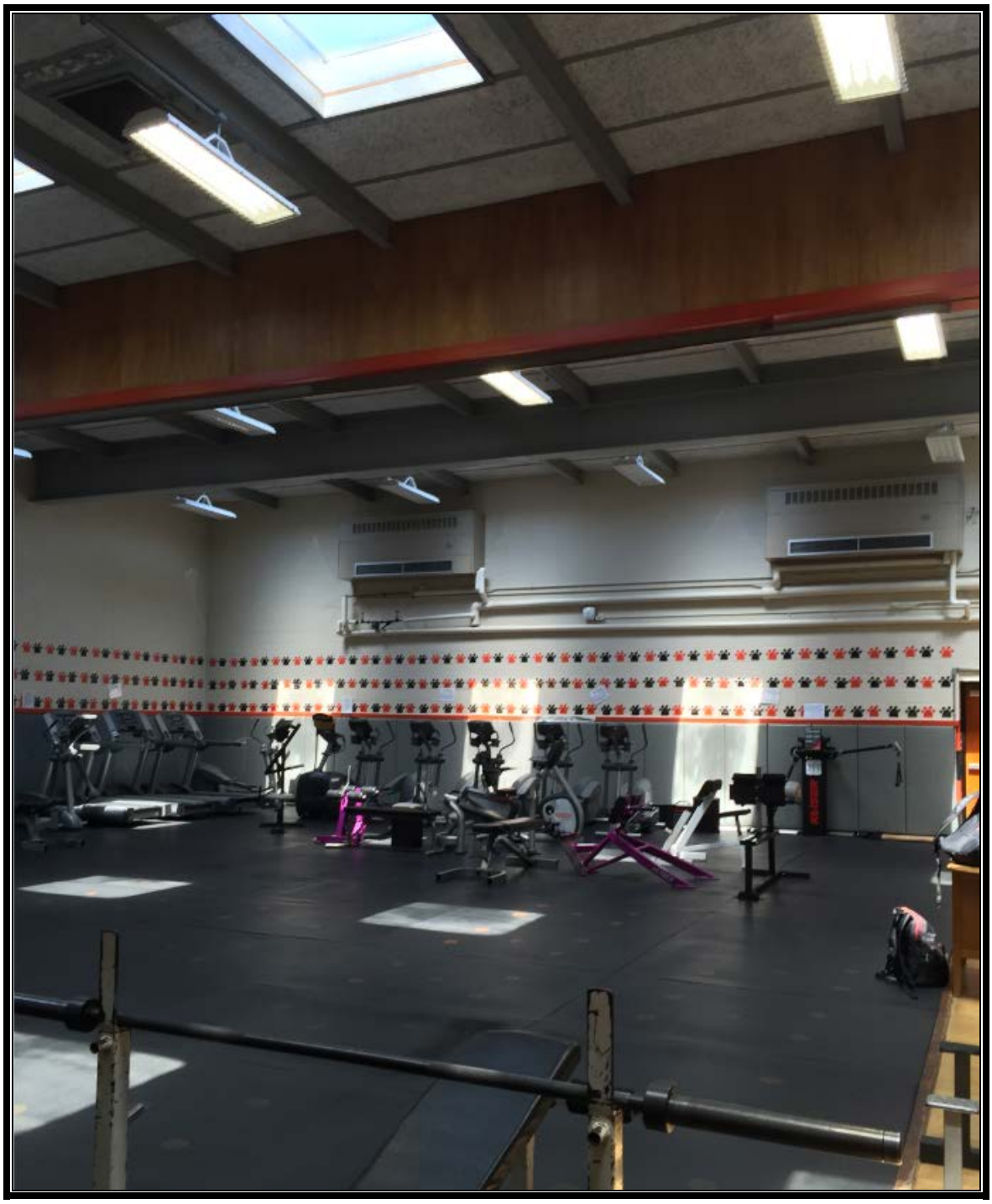

Photo 1: Auxilary Gym

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605
PHOTODOCUMENTATION LOG

Photo 2: Field House

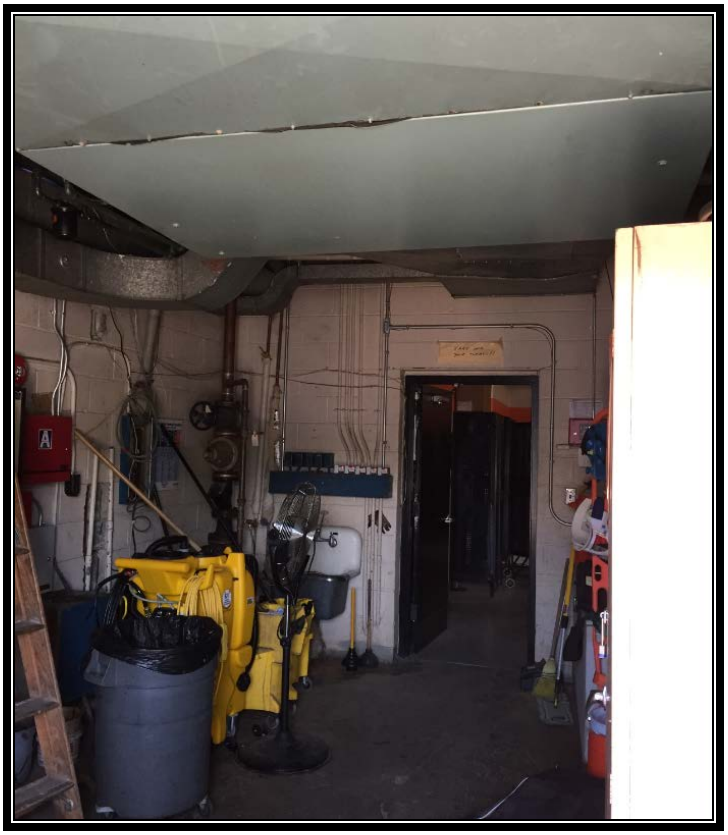

Photo 3: Field House Mechanical Room

APPENDIX I:
PREVIOUS SURVEY REPORT

FINAL REPORT OF ENVIRONMENTAL SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Prepared by:

The Louis Berger Group, Inc.
565 Taxter Road, 5th Floor
Elmsford, New York 10523
Tel. (914) 798-3710
Fax (914) 592-1734

Project No. 3000825
Submission Date: September 11, 2013

The Louis Berger Group Inc.
565 Taxter Road, 5th Floor, Elmsford, NY 10523
Tel 914 798 3710 Fax 914 592 1734 www.louisberger.com

September 11, 2013

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: Final Report of Environmental Services
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger Group (LBG) has completed a material Inspection at White Plains High School located at 550 North Street, White Plains, NY 10605. The Inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) associated with proposed renovations.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

THE LOUIS BERGER GROUP (LBG)

Craig Napolitano, CHMM
Director, Industrial Hygiene & Hazmat Services

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Appendices

1.0 EXECUTIVE SUMMARY

Louis Berger Group, Inc (LBG) has performed a renovation specific material Inspection for the presence or absence of Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) at White Plains High School located at 550 North Street, White Plains, NY 10605. The intent of this Inspection was to screen for Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) that may be impacted during the proposed renovations.

Michael Gelfand and Dmitri Kirnossenko of LBG performed this Inspection on July 24, 2013, and Andrew Cheskin performed an additional inspection on September 4, 2013. Mr. Kirnossenko has New York State Department of Labor (NYSDOL) Asbestos Inspector License (Cert# 07-01720). Mr. Gelfand has NYSDOL Asbestos Inspector License (Cert# 98-17113). Mr. Cheskin has NYSDOL Asbestos Inspector License (Cert# 05-04280). The results of the visual inspection and bulk sample analysis determined that the following suspect ACM and PCB materials may be impacted by the renovation project:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected by Berger indicate that the following materials **contain asbestos** (greater than 1-percent).

- **9”x9” Beige Floor Tiles (Auditorium)**
- **Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)**
- **Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)**
- **Exterior Metal Wall Panel Frame Caulking (Pool Building)**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

Analytical results of the bulk samples collected indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)

- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

The following materials were **assumed to contain asbestos**:

- **9"x9" Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C**
- **9"x9" Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor**
- **Ceiling Scratch Coat, Pool Building**
- **Ceiling Tectum Tiles, North and South Gym**
- **Built-up Roofing on Gym Roof**
- **Mechanical Equipment Flashing on Gym Roof**

B. PCB-CONTAINING MATERIAL

Analytical results of the bulk samples collected indicate that the following materials **contain PCB** (greater than 50 PPM).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain PCB** (less than 50 PPM);

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each

of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 307 West 38th Street, New York, NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-9)
- New York State Environmental Laboratory Approval Program (Lab No. 11506)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual

chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761), the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605), New York State Department of Environmental Conservation 6NYCRR 370-376 and federal Occupational Safety and Health Administration (OSHA) 29CFR 1926 & 1910. These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for suspect ACM and PCB materials that may be impacted by the proposed renovations. Locations surveyed include:

- Building Exterior
- Hallways
- Rooms
- Auditorium
- Gymnasiums
- Pool
- Gym Roof, Gym Mechanical Room Roof

A. ASBESTOS-CONTAINING MATERIAL

Materials examined during the Berger Inspection included:

- 9”x9” Beige Floor Tiles (Auditorium)
- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg. A Gas Room Exit)
- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- 9”x9” Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C

- 9”x9” Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor
- Ceiling Scratch Coat, Pool Building
- Ceiling Tectum Tiles, North and South Gym
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

Based upon visual inspection and bulk sample analysis asbestos has been confirmed to exist in the following materials:

- **9”x9” Beige Floor Tiles (Auditorium)**
- **Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)**
- **Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)**
- **Exterior Metal Wall Panel Frame Caulking (Pool Building)**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

Asbestos was **not detected** in the following materials via PLM and/or TEM analysis:

- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- Roof Decking, Gym Mechanical Room Roof
- Paper to Foam Insulation, Gym Mechanical Room Roof and Gym Roof
- Fiberboard Insulation, Gym Mechanical Room Roof and Gym Roof

- Fabric Barrier, Gym Mechanical Room Roof and Gym Roof
- Tar on Concrete Deck, Gym Roof

The following materials were **assumed to contain asbestos**:

- **9"x9" Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C**
- **9"x9" Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor**
- **Ceiling Scratch Coat, Pool Building**
- **Ceiling Tectum Tiles, North and South Gym**

B. PCB-CONTAINING MATERIAL

Materials examined during the Inspection included:

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

Based upon visual inspection and bulk sample, PCBs have been confirmed to exist in the following materials:

- **None**

PCB was **not detected** in the following testing combinations within the building via bulk sample analysis:

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were sampled and analyzed for asbestos content by Berger:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
A	Auditorium	Baseboard Glue (brown)	NAD
B	Auditorium	Baseboard Molding (brown)	NAD
C	Auditorium	Mastic assoc. with 9”x9” Floor Tiles (black)	NAD
D	**Auditorium**	**9”x9” Beige Floor Tiles**	**ACM**
E	Pool Connection Corridor	2’x4’ Ceiling Tiles (grey)	NAD
F	Pool Connection Corridor	Baseboard Glue (brown)	NAD
G	Pool Connection Corridor	Baseboard (brown)	NAD
H	Pool Bldg.	Wall Ceramic Tile Grout (white)	NAD
I	Pool Bldg.	Floor Ceramic Tile Grout (brown)	NAD
J	Pool Bldg.	Glazing at Entrance Aluminum Framing/Panels (white)	NAD
K	Pool Bldg.	Interior Brick Mortar (grey)	NAD
L	Pool Bldg.	**Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**ACM**
M	**Pool Bldg.**	**Exterior metal Wall Panel Glazing (type 1) (grey)**	**Contaminated ACM**
N	**Pool Bldg.**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**ACM**
O	**Pool Bldg.**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**ACM**
P	Auditorium	Cinderblock Mortar (grey)	NAD
Q	1st Floor Rooms	1’x1’ Pinhole Ceiling Tiles (white)	NAD
R	1st Floor Rooms	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
S	2nd Floor Rooms	1’x1’ Pinhole Ceiling Tiles (white)	NAD
T	2nd Floor Rooms	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
U	1st Floor Hallways	1’x1’ Pinhole Ceiling Tiles (white)	NAD
V	1st Floor Hallways	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
W	2nd Floor Hallways	1’x1’ Pinhole Ceiling Tiles (white)	NAD
X	2nd Floor Hallways	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
Y	Bldgs. A, B, C 1st Floor	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD
Z	Bldgs. A, B, C 2nd Floor	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD
A1	Bldgs. A, B, C	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD
B1	Bldgs. A, B, C	Wrap around Fiberglass Pipe Insulation (brown)	NAD
C1	Bldgs. A, B, C	Cinderblock Mortar (grey)	NAD
D1	Bldgs. A, B, C	Sheetrock Walls (white)	NAD
E1	Bldgs. A, B, C	Joint Compound assoc. with Sheetrock Walls (white)	NAD
F1	Gym Bldg.	Cinderblock Wall Mortar (grey)	NAD
G1	Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD
H1	**Gym Roof**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**ACM**
I1	**Bldg. A Gas Room Exit (NW corner of Bldg.)**	**Exterior Door Frame Caulking (grey)**	**ACM**
1	Gym Mechanical Room Roof	Roof Decking	NAD
2	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD
3	Gym Mechanical Room Roof	Fiberboard Insulation	NAD
4	Gym Mechanical Room Roof	Fabric Barrier	NAD
5	Gym Roof	Tar on Concrete Deck	NAD
6	Gym Roof	Paper to Foam Insulation	NAD
7	Gym Roof	Fabric Barrier	NAD

Bold = Positive for ACM NAD = No Asbestos Detected

B. PCB-CONTAINING MATERIAL

The PCB Inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were tested for PCB content:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
B	Pool Building	Interior Vertical Expansion Joint Caulking at Brick Curtain Walls	ND
C	Pool Building	Exterior metal Wall Panel Glazing (type 1)	ND
D	Pool Building	Exterior metal Wall Panel Glazing (type 2)	ND

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
E	Pool Building	Exterior Metal Wall Panel Frame Caulking	ND
F	Bldgs. A, B, C	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	
G	Gym Roof	Caulking at Metal Exhaust Vent Edges	ND
H	Gym Roof	Caulking at Flashing on Gym Mechanical Roof	ND
I	Bldg. A Gas Room Exit (NW corner of Bldg.)	Exterior Door Frame Caulking	ND

Bold = Positive for PCB ND = No PCB Detected

4.2 SAMPLE ANALYSIS TABLE

ACM laboratory analysis results are included in Appendix A.

5.0 AREAS NOT ACCESSIBLE

During the Inspection the following areas were not accessible:

- Void Spaces within Walls: No destructive sampling was performed on concealed spaces in walls to access plenum, chases etc. It should be assumed that asbestos, lead and PCB containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

- Pool Ceiling

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM materials have been identified in this inspection that may be impacted as part of the renovations at the White Plains High School. These materials, reported in Section 3.0 of this report, may require complete removal prior to the start of the renovation project. No PCBs were identified during this Inspection.

The ACM & PCB Inspection was conducted at the request of White Plains City School District for the proposed renovations, as provided by email from H2M Senior Project Architect. Any change in the scope of work will require further investigation to accurately classify any additional ACM or PCBs resulting from the modified or updated scope of work.

LIMITED INSPECTION
FOR
ASBESTOS-CONTAINING MATERIALS

White Plains High School
550 North Street
White Plains, NY 10605

Prepared For:

White Plains Public Schools
5 Homeside Lane
White Plains, NY 10605

Prepared By:

LOUIS BERGER & ASSOC., P.C.
565 Taxter Road, Suite 510
Elmsford, New York 10523
Tel. (914) 798-3710
Fax (914) 592-1734

PROJECT NO. 3000865.00
Submission: November 15, 2013

Louis Berger & Assoc., P.C.
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914 798-3710 Fax 914 592-1734 www.louisberger.com

November 15, 2013

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: Report of Limited Asbestos Inspection Services
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger & Assoc., P.C. (LBA) has completed a limited asbestos materials survey at the White Plains High School located at 550 North Street, White Plains, New York. The survey included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM).

The attached report presents descriptions and results of the material sampling procedures and analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

LOUIS BERGER & ASSOC., P.C. (LBA)

Craig Napolitano, CHMM
Director, Industrial Hygiene & Hazmat Services

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

At the request of the White Plains Public Schools, Louis Berger & Assoc., P.C. (LBA) has conducted a limited asbestos materials survey for the presence of asbestos-containing materials (ACM) for the Ceiling Tile Bulk Sampling at White Plains High School located at 550 North Street, White Plains, New York. The asbestos inspection was conducted on October 18, 2013 by Mr. Josue Garcia. Mr. Garcia (Cert# 01-04292) is a New York State Department of Labor (NYSDOL) Asbestos Inspector. The limited inspection involved a visual examination and sampling of all suspect ceiling tiles throughout the school. Inspection results are presented in Appendix A.

2.0 FIELD SURVEY PROCEDURES AND SAMPLE ANALYSIS METHODS

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, Asbestos Hazard Emergency Response Act (AHERA)

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the survey, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the

procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 307 West 38th Street, New York, NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-9)
- New York State Environmental Laboratory Approval Program (Lab No. 11506)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

3.0 SUMMARY OF INSPECTION RESULTS

The limited asbestos inspection was conducted on October 18, 2013 and involved a visual examination of Ground Floor, First Floor and Second Floor. Sampling of all suspect ceiling tiles was also performed. Inspection results are presented in Appendix A.

Asbestos in amounts ***greater than 1%*** was found in the following material:

Throughout Building:

- **None**

Laboratory analysis and/or visual inspection confirmed ***no asbestos*** present in amounts greater than 1% in samples collected from the following materials:

Throughout Building:

- 1'x1' Pinhole Pattern Ceiling Tile, White
- 2'x4' Fissured Ceiling Tile, White
- 1'x1' Gouged Ceiling Tile, White
- 2'x4' Small Pinhole Ceiling Tile, White
- 1'x1' Fissured Ceiling Tile, White
- 2'x4' (2'x2' Design) Ceiling Tile, White
- 2'x2' Small Pinhole Ceiling Tile, White

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on analytical results and our observations, the following materials were determined to be ACM:

- **None**

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.

5.0 ASBESTOS ABATEMENT COST ESTIMATES

The unit costs listed in this section are based on other projects of similar size, location and complexity. The cost estimate is budgetary in nature, since there are many variables that will affect the final construction cost. The costs presented are based on extrapolations from current construction prices available to us for comparable work in this area. "Means" guides were consulted, when applicable, with regional price adjustments for this area. However, Berger relies primarily on costs obtained from similar work recently bid.

Prices are based on current costs associated with prevailing wages and a competitive bid situation. Quantities are derived from our observation and linear takes-offs where drawings were made available to us or schematic drawing could easily be created from available information. Actual construction costs may vary based on a fully developed scope of work delineated in construction plans and specifications.

There will be other factors affecting the costs at the time projects are actually scheduled and bid. Such factors include the overall size of the total work package bid by a contractor, unforeseen conditions, state of the economy, inflation and the availability of materials. If the project is phased, escalation in cost should be anticipated.

Cost estimates have been prepared with the following assumptions:

- Union labor or prevailing wage
- Insurance, profit and overhead costs have been estimated and will vary among contractors
- All work areas may not be able to be abated in a continuous fashion and down time may occur for varying periods.
- Electric power and water to be provided by others
- Prices do not include air monitoring costs
- Reinstallation work has not been factored into the cost estimates

Asbestos Material	Quantity	Unit Price	Cost Estimate
	0 SF	$10	$0
		ACM Removal Sub-Total	$0
		Decontaminations Units	$0
		Mobilization & Demobilization	$0
		Sub-Totals	$0
		Insurance @ 7%	$0
		Profit/Overhead @ 15%	$0

Notes:

1. The above cost includes the waste hauling charges, filing fees and other miscellaneous cost associated with asbestos abatement by the abatement contractor.

Louis Berger
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914-798-3710 Fax 914-592-1734 www.louisberger.com

September 21, 2016
Revised: September 26, 2016

Mr. Frank Stefanelli
Director of Facilities
White Plains Public Schools
580 North Street
White Plains, NY 10605

Subject: **Report for Limited Asbestos Survey Services in Conjunction with the 5 Roof Solar Panel Installation Project at White Plains High School 550 North Street White Plains NY**

Dear Mr. Stefanelli:

Louis Berger (Berger) has completed limited asbestos materials survey at the White Plains High School located at 550 North Street, White Plains NY. The survey was conducted on September 13, 2016 by Marvin Luccioni, a NYS DOL Licensed Asbestos Inspector (03-11021). The survey included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) for the upcoming 5 roof solar panel installation project. Berger inspected the following suspect materials in order to address specific concerns and suspect materials to be impacted by the current scope of work (SOW).

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
Samples Collected on September 13, 2016			
1	Roof C	Tar on Concrete, Black	NAD
2	Roof C	Roofing Felt Pape, Black	NAD
3	Roof C	Roofing Rubber Membrane w/ Glue	NAD
4	Roof C	Tar on Roofing Membrane, Black	NAD
5	Roof G	Gypsum Planking on Metal Deck, White	NAD
6	Roof G	Roofing Felt Paper, Black	NAD
7	Roof G	Brown Insulation	NAD
8	Roof G	Roofing Rubber membrane w/ Glue	NAD
9	Roof G	Tar on Roofing Membrane, Black	<1% Chrysotile
10	Roof A	Tar on Concrete, Black	NAD
11	Roof A	Roofing Felt Pape, Black	NAD
12	Roof A	Roofing Rubber Membrane w/ Glue	NAD

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
13	Roof A	Tar on Roofing Membrane, Black	NAD
14	Roof B	Tar on Concrete, Black	NAD
15	Roof B	Roofing Felt Pape, Black	NAD
16	Roof B	Roofing Rubber Membrane w/ Glue	NAD
17	Roof B	Tar on Roofing Membrane, Black	NAD
18	Café Roof	Gypsum Planking on Metal Deck, White	NAD
19	Café Roof	Roofing Felt Paper, Black	NAD
20	Café Roof	Brown Insulation	NAD
21	Café Roof	Roofing Rubber membrane w/ Glue	NAD
22	Roof A, B & Exterior Façades	Ext. Brick Mortar, Gray	NAD
---	Electrical Room near Custodians Office	Interior Concrete	Non-suspect
---	Exterior Façade outside Electrical Room near Custodians Office	Exterior Concrete	Non-suspect
---	Exterior Façade outside Electrical Room near Custodians Office	Exterior Metal Panels	Non-suspect
---	**Exterior Façade outside Electrical Room near Custodians Office**	**Caulking to Exterior Metal Panels, Gray**	**Assumed ACM**
---	Exterior Façade outside Electrical Room near Custodians Office	Limestone Slabs below Windows	Non-suspect
---	**Exterior Façade outside Electrical Room near Custodians Office**	**Weatherproofing Material behind Limestone Slabs, Black**	**Assumed ACM**
AHERA Report & Previous Survey's Reports			
---	Electrical Room near Custodians Office	1'x1' Pinhole Ceiling Tiles, White	NAD
---	Electrical Room near Custodians Office	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown	NAD
---	Electrical Room near Custodians Office	Fittings Insulation assoc. with Fiberglass Pipe Insulation, Gray	NAD
---	Electrical Room near Custodians Office	Wrap around Fiberglass Pipe Insulation	NAD
---	Electrical Room near Custodians Office	Cinderblock Mortar, Gray	NAD

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
---	Electrical Room near Custodians Office	Sheetrock Walls, White	NAD
---	Electrical Room near Custodians Office	Joint Compound assoc. with Sheetrock Walls, White	NAD

NAD = No Asbestos Detected

It is our hope that the information provided in this letter has met the project requirements. Thank you for the opportunity to provide you and your staff with our continued services. Please contact me at 212-612-7938 if you have any questions or require any additional information.

Sincerely,
Louis Berger

Marvin Luccioni
Principle Environmental Specialist, Emergency Management & IH Services

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
1	01	Roof C	Tar on Concrete, Black	NAD	NAD
	02			NAD	NAD
2	03	Roof C	Roofing Felt Pape, Black	NAD	N/A
	04			NAD	N/A
3	05	Roof C	Roofing Rubber Membrane w/ Glue	NAD	NAD
	06			NAD	NAD
4	07	Roof C	Tar on Roofing Membrane, Black	NAD	NAD
	08			NAD	NAD
5	09	Roof G	Gypsum Planking on Metal Deck, White	NAD	N/A
	10			NAD	N/A
6	11	Roof G	Roofing Felt Paper, Black	NAD	N/A
	12			NAD	N/A
7	13	Roof G	Brown Insulation	NAD	N/A
	14			NAD	N/A
8	15	Roof G	Roofing Rubber membrane w/ Glue	NAD	NAD
	16			NAD	NAD

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
9	17	Roof G	Tar on Roofing Membrane, Black	<1% Chrysotile	<1% Chrysotile
	18			NAD	<1% Chrysotile
10	19	Roof A	Tar on Concrete, Black	NAD	NAD
	20			NAD	NAD
11	21	Roof A	Roofing Felt Pape, Black	NAD	N/A
	22			NAD	N/A
12	23	Roof A	Roofing Rubber Membrane w/ Glue	NAD	NAD
	24			NAD	NAD
13	25	Roof A	Tar on Roofing Membrane, Black	NAD	NAD
	26			NAD	NAD
14	27	Roof B	Tar on Concrete, Black	NAD	NAD
	28			NAD	NAD
15	29	Roof B	Roofing Felt Pape, Black	NAD	N/A
	30			NAD	N/A
16	31	Roof B	Roofing Rubber Membrane w/ Glue	NAD	NAD
	32			NAD	NAD
17	33	Roof B	Tar on Roofing Membrane, Black	NAD	NAD
	34			NAD	NAD
18	35	Café Roof	Gypsum Planking on Metal Deck, White	NAD	N/A
	36			NAD	N/A
19	37	Café Roof	Roofing Felt Paper, Black	NAD	N/A

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
	38			NAD	N/A
20	39	Café Roof	Brown Insulation	NAD	N/A
	40			NAD	N/A
21	41	Café Roof	Roofing Rubber membrane w/ Glue	NAD	NAD
	42			NAD	NAD
22	43	Roof A	Ext. Brick Mortar, Gray	NAD	N/A
	44	Roof B		NAD	N/A

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

061612820

LOUIS BERGER	ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY	PAGE 1 OF 4

PROJ NO: 2011353.013
CLIENT: W.P.C.S.D **CAPIS ID#:**
PROJECT SITE: WHITE PLAINS HIGH SCHOOL
PROJECT ADDRESS: 550 NORTH ST, WHITE PLAINS NY 10605

LOCATION(S) SURVEYED: Roofs A, B, C, G, CAFE Roof
PROJECT MANAGER:
DATE(S) OF INSPECTION: 09/13/16
Inspector(s) M. Uccioni

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 **FAX NO.: (212) 363-4341**
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: muccioni@louisberger.com

TURNAROUND TIME: 72 HRS
FRIABLE ☐ 24 HRS. NOB/TEM ☐ 48 HRS.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
1	01	ROOF C	TAR ON CONCRETE, BLACK		BOT. STOP @ 1ST POSITIVE
↓	02	↓	↓		↓
2	03	↓	ROOFING FELT PAPER, BLACK		2016 SEP 14 AM 7 59
↓	04	↓	↓		↓
3	05	↓	ROOFING RUBBER MEMBRANE W/ GLUE.		↓
↓	06	↓	↓		↓
4	07	↓	TAR ON ROOFING MEMBRANE, BLACK		↓
↓	08	↓	↓		↓
5	09	ROOF G	GYPSUM PLANKING ON METAL DECK, WHITE		BOT. STOP @ 1ST POSITIVE
↓	10	↓	↓		↓
6	11	↓	ROOFING FELT PAPER, BLACK		↓
↓	12	↓	↓		↓

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)	Date	Time	Relinquished by: (print)	(Sign)	Date	Time	Relinquished by: (print)	(Sign)	Date	Time
M. Uccioni	[signature]	09/15/16	2200 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	**(Sign)**			**Received by: (print)**	**(Sign)**			**Received by: (print)**	**(Sign)**		
		/ /	AM/PM	Pete Hayes	[signature]	9/17/16	7:34 AM/PM	F. Calderon	[signature]	9/19/16	AM/PM

[signature] 9-21-16 Lomás Montes de Oca 9/21/16

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group

061612820

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJ NO: 20113573.013
CLIENT: WPCSO **CAPIS ID#:**
PROJECT SITE: WPHS
PROJECT ADDRESS:

LOCATION(S) SURVEYED:
PROJECT MANAGER:
DATE(S) OF INSPECTION: 09/13/16
Inspector(s)

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 **FAX NO.: (212) 363-4341**
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:

TURNAROUND TIME:
FRIABLE ☐ 24 HRS. NOB/TEM ☐ 48 HRS.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
7	13	ROOF G	BROWN INSULATION		CONTI FROM PREVIOUS NOTES
↓	14	↓	↓		2016 ROOF LEAK
8	15		ROOFING RUBBER MEMBRANE W/ GLUE		
↓	16		↓		
9	17		TAR ON ROOFING MEMBRANE		
↓	18	↓	↓		
10	19	ROOF A	TAR ON CONCRETE, BLACK		BOT. STOP @ 1ST POSITIVE
↓	20	↓	↓		↓
11	21		ROOFING FELT PAPER, BLACK		
↓	22		↓		
12	23		ROOFING RUBBER MEMBRANE W/ GLUE		TOP
↓	24	↓	↓		↓

CHAIN OF CUSTODY

Relinquished by (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by (print)	(Sign)		
M. Lucchesi		09/15/16	2200 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) P Hayes	(Sign) P Hayes	9/17/16	7:15 AM/PM	Received by (print) J. Colon	(Sign)	9/19/16	AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

Tomás Montalvo-Oben 9/21/16

061612820

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJ NO: 2011353.013
CLIENT: _____ **CAPIS ID#:** _____
PROJECT SITE: WTHS.
PROJECT ADDRESS: _____

LOCATION(S) SURVEYED: _____
PROJECT MANAGER: _____
DATE(S) OF INSPECTION: 09/13/16
Inspector(s) _____

LOUIS BERGER
TELEPHONE NO. . (212) 612-7900 **FAX NO.: (212) 363-4341**
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: ;

TURNAROUND TIME:
FRIABLE ☐ 24 HRS. NOB/TEM ☐ 48 HRS.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
13	25	ROOF A	TAR ON ROOFING MEMBRANE, BLACK		REFER PREVIOUS NOT FROM 09.
↓	26	↓	↓		↓
14	27	ROOF B	TAR ON CONCRETE, BLACK		BOT. STOP IST POSITIVE
↓	28		↓		↓
15	29		ROOFING FELT PAPER, BLACK		
↓	30		↓		
16	31		ROOFING RUBBER MEMBRANE W/ GLUE		
↓	32		↓		
17	33		TAR ON ROOFING MEMBRANE, BLACK		
↓	34		↓		
18	35	CAFE ROOF	GYPSUM PLANKING ON METAL DECK, WHITE		
↓	36	↓	↓		

2016 SEP 21 A 8:59

Page 3 Of 4

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
M. Lucchesi		09/15/16	22:00 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print) Pete Hayes	(Sign)	9/17/16	9:57 AM/PM	Received by: (print)	(Sign)	9/19/16	AM/PM

9-21-16 Louis Montalbano 9/21/16

GENERAL NOTES: All inconclusive NORs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PROJ NO: 2011353.013
CLIENT: ______ **CAPIS ID#:** ______
PROJECT SITE: WPH.S
PROJECT ADDRESS: ______

LOCATION(S) SURVEYED: ______
PROJECT MANAGER: ______
DATE(S) OF INSPECTION: 09/13/16
Inspector(s) ______

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 **FAX NO.: (212) 363-4341**
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:

TURNAROUND TIME:
FRIABLE ☐ 24 HRS. NOB/TEM ☐ 48 HRS.

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
19	37	CAFE ROOF	ROOFING FELT PAPER, BLACK		
↓	38	↓	↓		
20	39	↓	BROWN INSULATION		
↓	40	↓	↓		
21	41	↓	ROOFING RUBBER MEMBRANE GLUE		
↓	42	↓	↓		
22	43	ROOF A	EXT. BRICK MORTAR, GREY		
↓	44	ROOF B	↓		
			061612820		

2016 SEP 17 A 7:59

Page 4 Of 4

CHAIN OF CUSTODY

Relinquished by: (print) M. McCoom	(Sign) [signature]	09/15/16	22 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by (print)	(Sign) / / AM/PM
Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print) [signature]	(Sign) [signature]	9/17/16	759 AM/PM	Received by (print) P. Calder	(Sign) [signature] 9/19/16 AM/PM

[signature] 9.21 Lamas Montes De Oca 9/21/16

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

OrderID: 061612820

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
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EMSL Order: 061612820
Customer ID: LBAP78
Customer PO: 2011353.013
Project ID:

Attention: Marvin Luccioni
Louis Berger U.S., Inc
48 Wall St.
New York, NY 10005

Phone: (718) 730-2741
Fax:
Received Date: 09/17/2016 7:59 AM
Analysis Date: 09/19/2016 - 09/21/2016
Collected Date: 09/13/2016

Project: Proj# 2011353.013, Client: W.P.C.S.D, White Plains High School, 550 North St, White Plains, NY 10605, Roofs A,B,C,G, Caf E Roof

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 1-01 *061612820-0001*		**Description** Roof C - Tar on Concrete, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 1-02 *061612820-0002*		**Description** Roof C - Tar on Concrete, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 2-03 *061612820-0003*		**Description** Roof C - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan/ Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan/ Black		100.00% Other	**None Detected**
Sample ID 2-04 *061612820-0004*		**Description** Roof C - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan/ Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan/ Black		100.00% Other	**None Detected**
Sample ID 3-05 *061612820-0005*		**Description** Roof C - Roofing Rubber Membrane w/ Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	1.40% Glass	98.60% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 3-06 *061612820-0006*		**Description** Roof C - Roofing Rubber Membrane w/ Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	1.30% Glass	98.70% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 4-07 *061612820-0007*		**Description** Roof C - Tar on Roofing Membrane, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 4-08 *061612820-0008*		**Description** Roof C - Tar on Roofing Membrane, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 5-09 *061612820-0009*		**Description** Roof G - Gypsum Planking on Metal Deck, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/19/2016	White	1.00% Cellulose 2.00% Glass	97.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 5-10 *061612820-0010*		**Description** Roof G - Gypsum Planking on Metal Deck, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/19/2016	White	1.00% Cellulose 2.00% Glass	97.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 6-11 *061612820-0011*		**Description** Roof G - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	White/ Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	White/ Black		100.00% Other	**None Detected**

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Project ID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 6-12 *061612820-0012*		**Description** Roof G - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan/ Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan/ Black		100.00% Other	**None Detected**
Sample ID 7-13 *061612820-0013*		**Description** Roof G - Brown Insulation **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	09/19/2016	Brown	93.00% Cellulose	7.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 7-14 *061612820-0014*		**Description** Roof G - Brown Insulation **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/19/2016	Brown	97.00% Cellulose	3.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 8-15 *061612820-0015*		**Description** Roof G - Roofing Rubber Membrane w/ Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 8-16 *061612820-0016*		**Description** Roof G - Roofing Rubber Membrane w/ Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 9-17 *061612820-0017*		**Description** Roof G - Tar on Roofing Membrane **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	None	100.00% Other	**Inconclusive : <1.00% Chrysotile**
TEM NYS 198.4 NOB	09/21/2016	Black	None	100.00% Other	**<1.00% Chrysotile**

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Customer ID: LBAP78
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Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 9-18 *061612820-0018*		**Description** Roof G - Tar on Roofing Membrane **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black	None	100.00% Other	**<1.00% Chrysotile**
Sample ID 10-19 *061612820-0019*		**Description** Roof A - Tar on Concrete, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 10-20 *061612820-0020*		**Description** Roof A - Tar on Concrete, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 11-21 *061612820-0021*		**Description** Roof A - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan	1.00% Glass	99.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan		100.00% Other	**None Detected**
Sample ID 11-22 *061612820-0022*		**Description** Roof A - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan	1.10% Glass	98.90% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan		100.00% Other	**None Detected**
Sample ID 12-23 *061612820-0023*		**Description** Roof A - Roofing Rubber Memebrane w/ Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	1.10% Glass	98.90% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**

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Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 12-24 *061612820-0024*		**Description** Roof A - Roofing Rubber Memebrane w/ Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	2.60% Glass	97.40% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 13-25 *061612820-0025*		**Description** Roof A - Tar on Roofing Membrane, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 13-26 *061612820-0026*		**Description** Roof A - Tar on Roofing Membrane, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 14-27 *061612820-0027*		**Description** Roof B - Tar on Concrete, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 14-28 *061612820-0028*		**Description** Roof B - Tar on Concrete, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 15-29 *061612820-0029*		**Description** Roof B - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan	1.30% Glass	98.70% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 15-30 *061612820-0030*		**Description** Roof B - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Tan	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Tan		100.00% Other	**None Detected**
Sample ID 16-31 *061612820-0031*		**Description** Roof B - Roofing Rubber Membrane w/Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	1.10% Glass	98.90% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 16-32 *061612820-0032*		**Description** Roof B - Roofing Rubber Membrane w/Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 17-33 *061612820-0033*		**Description** Roof B - Tar on Roofing Membrane, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 17-34 *061612820-0034*		**Description** Roof B - Tar on Roofing Membrane, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Black		100.00% Other	**None Detected**
Sample ID 18-35 *061612820-0035*		**Description** Café Roof - Gypsum Planking on Metal Deck, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/19/2016	White	1.00% Cellulose 2.00% Glass	97.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 18-36 *061612820-0036*		**Description** Café Roof - Gypsum Planking on Metal Deck, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/19/2016	White	1.00% Cellulose 2.00% Glass	97.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 19-37 *061612820-0037*		**Description** Café Roof - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	White/ Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	White/ Black		100.00% Other	**None Detected**
Sample ID 19-38 *061612820-0038*		**Description** Café Roof - Roofing Felt Paper, Black **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	White/ Black	<1.00% Glass	100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	White/ Black		100.00% Other	**None Detected**
Sample ID 20-39 *061612820-0039*		**Description** Café Roof - Brown Insulation **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	09/19/2016	Brown	95.00% Cellulose	5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 20-40 *061612820-0040*		**Description** Café Roof - Brown Insulation **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	09/19/2016	Brown	97.00% Cellulose	3.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 21-41 *061612820-0041*		**Description** Café Roof - Roofing Rubber Membrane Glue **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Brown/ Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Brown/ Black		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 21-42 *061612820-0042*		**Description**	Café Roof - Roofing Rubber Membrane Glue		
		Homogeneity	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	09/20/2016	Brown/ Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	09/21/2016	Brown/ Black		100.00% Other	**None Detected**
Sample ID 22-43 *061612820-0043*		**Description**	Roof A - Ext. Brick Mortar, Gray		
		Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable	09/19/2016	Gray		30.00% Ca Carbonate 20.00% Non-fibrous (other) 50.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 22-44 *061612820-0044*		**Description**	Roof B - Ext. Brick Mortar, Gray		
		Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable	09/19/2016	Gray		30.00% Ca Carbonate 25.00% Non-fibrous (other) 45.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

PLM 06-02- Leica DM750P- Serial # 931374717AX003/10/10
PLM 06-03- Leica DM EP - Serial # 411239923NV0034
TEM Scope 06-01 – Jeol 100 CXII Serial # EM156146-37

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods . The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

Sample Receipt Date:	9/17/2016	Sample Receipt Time:	7:59 AM
Analysis Completed Date:	9/20/2016	Analysis Completed Time:	10:07 PM

Analyst(s):

Pedro Calderon PLM NYS 198.1 Friable (10)

Tomas Montes De Oca PLM NYS 198.6 NOB (34)

Keith McWilliams TEM NYS 198.4 NOB (34)

Samples reviewed and approved by:

Michelle McGowan, Laboratory Manager
or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non -asbestos containing.
All samples examined for the presence of vermiculite when analyzed via NYS 198.1.
-NYS Guidelines for Vermiculite containing samples are available at http ://www.wadsworth.org/labcert/elapcert/forms/ VermiculiteInterimGuidance_Rev070913.pdf EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations . Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation .

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NYS ELAP 11469

Initial Report From: 09/21/2016 02:54:39

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

The Louis Berger Group, Inc.
16th Floor
48 Wall Street

New York, NY 10005

FILE NUMBER: 03-0940
LICENSE NUMBER: 29635
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 12/16/2015
EXPIRATION DATE: 12/31/2016

Duly Authorized Representative – Craig Napolitano:

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)


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S
MARVIN LUCCIONI
CLASS(EXPIRES)
C ATEC(02/17) D INSP(02/17)
H PM (02/17) I PD (02/17)
CERT# 03-11021
MUST BE CARRIED ON ASBESTOS PROJECTS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2017
Issued April 01, 2016

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MICHELLE MCGOWAN
EMSL ANALYTICAL, INC.
528 MINEOLA AVE.
CARLE PLACE, NY 11514

NY Lab Id No: 11469

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
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

Sample Preparation Methods

	EPA 3050B

Serial No.: 54283

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

June 15, 2016

Michelle McGowan
EMSL Analytical, Inc.
528 Mineola Ave.
Carle Place, NY 11514

NVLAP Lab Code: 101048-10

Dear Ms. McGowan,

Thank you for continuing your accreditation for Asbestos Fiber Analysis under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until June 30, 2017, provided that your laboratory continues to comply with the accreditation requirements contained in the NVLAP Procedures.

Your updated accreditation documents are enclosed. You may reproduce these documents in their entirety and use the NVLAP symbol and/or term to reference your accredited status in accordance with the requirements published in NIST Handbook 150, 1.8. Accreditation does not relieve your laboratory from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Hazel Richmond, Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, 100 Bureau Dr. Stop 2140, Gaithersburg, MD 20899-2140; (301) 975-3024.

Sincerely,

Dana S. Leaman, Chief
National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
528 Mineola Ave.
Carle Place, NY 11514
Ms. Michelle McGowan
Phone: 516-997-7251 Fax: 516-997-7528
Email: mmcgowan@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 101048-10

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA 600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101048-10

EMSL Analytical, Inc.

Carle Place, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2016-07-01 through 2017-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

March 31, 2016

Laboratory ID: 102344

Michelle McGowan
EMSL Analytical, Inc.
528 Mineola Ave.
Carle Place, NY 11514

Dear Ms. McGowan:

Congratulations! The AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC's Analytical Accreditation Board (AAB) has approved EMSL Analytical, Inc. as an accredited Industrial Hygiene, Environmental Lead and Environmental Microbiology laboratory.

Accreditation documentation includes the IHLAP, ELLAP and EMLAP accreditation certificate, scope of accreditation document and a copy of the current AIHA-LAP, LLC license agreement (if your completed agreement is not on file at AIHA-LAP, LLC). The accreditation symbol has been designed for use by all AIHA-LAP, LLC accredited laboratories. If your laboratory chooses to use the symbol in its advertising the laboratory's accreditation, you must complete and return the AIHA-LAP, LLC license agreement to a Laboratory Accreditation Specialist. Once submitted, an electronic copy of the accreditation symbol will be sent to you. Please inform us if your laboratory does not wish to use the symbol in advertising.

Laboratory accreditation shall be maintained by continued compliance with IHLAP, ELLAP and EMLAP requirements *(see Policy Modules 2B, 2C, 2D, and 6)*, which includes proficient participation in AIHA-LAP, LLC approved proficiency testing, demonstration of competency, or round robin program as indicated on the AIHA-LAP "Approved PT and Round Robin" webpage, its associated Scope/PT table, and as required in Policy Module 6, for all Fields of Testing (FoTs) for which the laboratory is accredited. An accredited laboratory that wishes to expand into a new FoT must submit an updated accreditation application to AIHA-LAP, LLC for review by the AAB.

Any changes in ownership, laboratory location, personnel, FoTs/Methods, or significant procedural changes shall be reported to AIHA-LAP, LLC in writing within twenty (20) business days of the change.

The accreditation certificate is the property of AIHA-LAP, LLC and must be returned to us should your laboratory withdraw or be removed from the IHLAP, ELLAP and EMLAP.

Again, congratulations. If you have any questions, please contact Lauren Schnack, Laboratory Accreditation Specialist, at (703) 846-0716.

Sincerely,

Cheryl O. Morton

Cheryl O. Morton
Managing Director
AIHA Laboratory Accreditation Programs, LLC

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

528 Mineola Ave., Carle Place, NY 11514

Laboratory ID: 102344

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories* in the following:

LABORATORY ACCREDITATION PROGRAMS

✓	**INDUSTRIAL HYGIENE**	Accreditation Expires: June 01, 2018
✓	**ENVIRONMENTAL LEAD**	Accreditation Expires: June 01, 2018
✓	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: June 01, 2018
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached **Scope of Accreditation**. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached **Scope of Accreditation**. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

William Walsh, CIH
Chairperson, Analytical Accreditation Board

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision 15: 03/30/2016

Date Issued: 03/31/2016

AIHA Laboratory Accreditation Programs, LLC
SCOPE OF ACCREDITATION

EMSL Analytical, Inc.
528 Mineola Ave., Carle Place, NY 11514

Laboratory ID: **102344**
Issue Date: 03/31/2016

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 10/01/2005

IHLAP Scope Category	**Field of Testing (FoT)** (FoTs cover all relevant IH matrices)	**Technology sub-type/ Detector**	**Published Reference Method/Title of In-house Method**	**Method Description or Analyte** *(for internal methods only)*
Asbestos/Fiber Microscopy Core	Phase Contrast Microscopy (PCM)		NIOSH 7400	

A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA-LAP, LLC website at: http://www.aihaaccreditedlabs.org

AIHA Laboratory Accreditation Programs, LLC
SCOPE OF ACCREDITATION

EMSL Analytical, Inc.
528 Mineola Ave., Carle Place, NY 11514

Laboratory ID: **102344**
Issue Date: 03/31/2016

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

The EPA recognizes the AIHA-LAP, LLC ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air analysis is not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)

Initial Accreditation Date: 08/15/1999

Field of Testing (FoT)	Technology sub-type/ Detector	Method	Method Description (*for internal methods only*)
Paint		EPA SW-846 3050B	
		EPA SW-846-7000B	
Soil		EPA SW-846 3050B	
		EPA SW-846-7000B	
Settled Dust by Wipe		EPA SW-846 3050B	
		EPA SW-846-7000B	
Airborne Dust		NIOSH 7082	

A complete listing of currently accredited Environmental Lead laboratories is available on the AIHA-LAP, LLC website at: http://www.aihaaccreditedlabs.org

AIHA Laboratory Accreditation Programs, LLC
SCOPE OF ACCREDITATION

EMSL Analytical, Inc.
528 Mineola Ave., Carle Place, NY 11514

Laboratory ID: **102344**
Issue Date: 03/31/2016

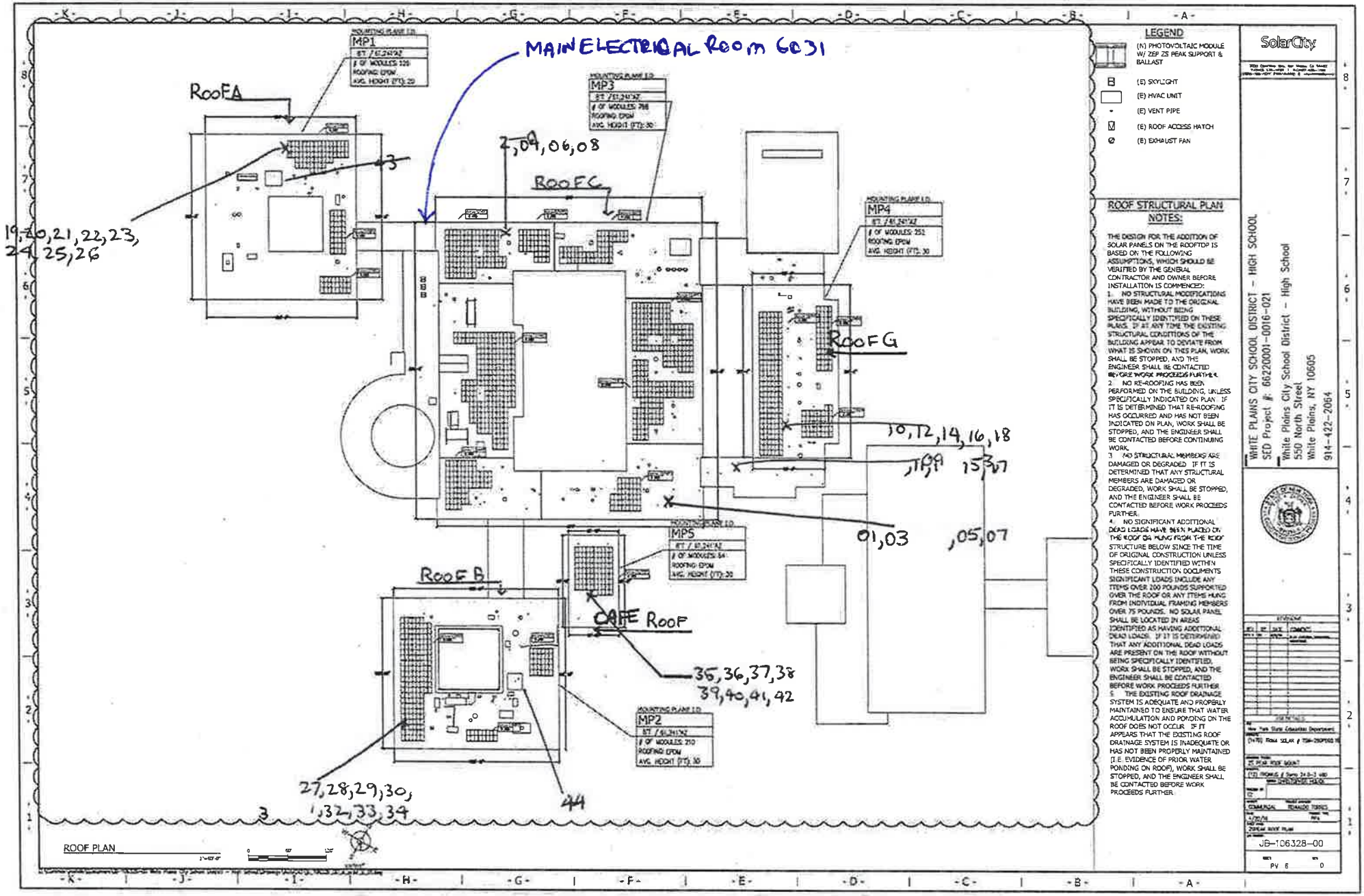
The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Environmental Microbiology Laboratory Accreditation Program (EMLAP)

Initial Accreditation Date: 05/01/2015

EMLAP Category	Field of Testing (FoT)	Method	Method Description (*for internal methods only*)
Fungal	Air - Direct Examination	05-TP-003.7	Standard Operating Procedure for the Analysis of Airborne Fungal Spores, Hyphal Fragments, Pollen, Insect Fragments, Skin Fragments and Fibrous Particulate by Optical Microscopy of Spore Trap Samples
	Bulk - Direct Examination	M041 - Direct Examination	Standard Operating Procedure for the Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, Pollen, Insect Fragments, and Fibrous Particulate from Surface Samples
	Surface - Direct Examination	M041 - Direct Examination	Standard Operating Procedure for the Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, Pollen, Insect Fragments, and Fibrous Particulate from Surface Samples

A complete listing of currently accredited Environmental Microbiology laboratories is available on the AIHA-LAP, LLC website at: http://www.aihaaccreditedlabs.org



LEGEND

- (N) PHOTOVOLTAIC MODULE W/ ZEP ZS PEAK SUPPORT & BALLAST
- (E) SKYLIGHT
- (E) HVAC UNIT
- (E) VENT PIPE
- (E) ROOF ACCESS HATCH
- (E) EXHAUST FAN

ROOF STRUCTURAL PLAN NOTES:

THE DESIGN FOR THE ADDITION OF SOLAR PANELS ON THE ROOFTOP IS BASED ON THE FOLLOWING ASSUMPTIONS, WHICH SHOULD BE VERIFIED BY THE GENERAL CONTRACTOR AND OWNER BEFORE INSTALLATION IS COMMENCED:

1. NO STRUCTURAL MODIFICATIONS HAVE BEEN MADE TO THE ORIGINAL BUILDING, WITHOUT BEING SPECIFICALLY IDENTIFIED ON THESE PLANS. IF AT ANY TIME THE EXISTING STRUCTURAL CONDITIONS OF THE BUILDING APPEAR TO DEVIATE FROM WHAT IS SHOWN ON THES PLAN, WORK SHALL BE STOPPED, AND THE ENGINEER SHALL BE CONTACTED BEFORE WORK PROCEEDS FURTHER.
2. NO RE-ROOFING HAS BEEN PERFORMED ON THE BUILDING, UNLESS SPECIFICALLY INDICATED ON PLAN. IF IT IS DETERMINED THAT RE-ROOFING HAS OCCURRED AND HAS NOT BEEN INDICATED ON PLAN, WORK SHALL BE STOPPED, AND THE ENGINEER SHALL BE CONTACTED BEFORE CONTINUING WORK.
3. NO STRUCTURAL MEMBERS ARE DAMAGED OR DEGRADED. IF IT IS DETERMINED THAT ANY STRUCTURAL MEMBERS ARE DAMAGED OR DEGRADED, WORK SHALL BE STOPPED, AND THE ENGINEER SHALL BE CONTACTED BEFORE WORK PROCEEDS FURTHER.
4. NO SIGNIFICANT ADDITIONAL DEAD LOADS HAVE BEEN PLACED ON THE ROOF OR HUNG FROM THE ROOF STRUCTURE BELOW SINCE THE TIME OF ORIGINAL CONSTRUCTION UNLESS SPECIFICALLY IDENTIFIED WITHIN THESE CONSTRUCTION DOCUMENTS. SIGNIFICANT LOADS INCLUDE ANY ITEMS OVER 200 POUNDS SUPPORTED OVER THE ROOF OR ANY ITEMS HUNG FROM INDIVIDUAL FRAMING MEMBERS OVER 75 POUNDS. NO SOLAR PANEL SHALL BE LOCATED IN AREAS IDENTIFIED AS HAVING ADDITIONAL DEAD LOADS. IF IT IS DETERMINED THAT ANY ADDITIONAL DEAD LOADS ARE PRESENT ON THE ROOF WITHOUT BEING SPECIFICALLY IDENTIFIED, WORK SHALL BE STOPPED, AND THE ENGINEER SHALL BE CONTACTED BEFORE WORK PROCEEDS FURTHER.
5. THE EXISTING ROOF DRAINAGE SYSTEM IS ADEQUATE AND PROPERLY MAINTAINED TO ENSURE THAT WATER ACCUMULATION AND PONDING ON THE ROOF DOES NOT OCCUR. IF IT APPEARS THAT THE EXISTING ROOF DRAINAGE SYSTEM IS INADEQUATE OR HAS NOT BEEN PROPERLY MAINTAINED (I.E. EVIDENCE OF PRIOR WATER PONDING ON ROOF), WORK SHALL BE STOPPED, AND THE ENGINEER SHALL BE CONTACTED BEFORE WORK PROCEEDS FURTHER.

SolarCity

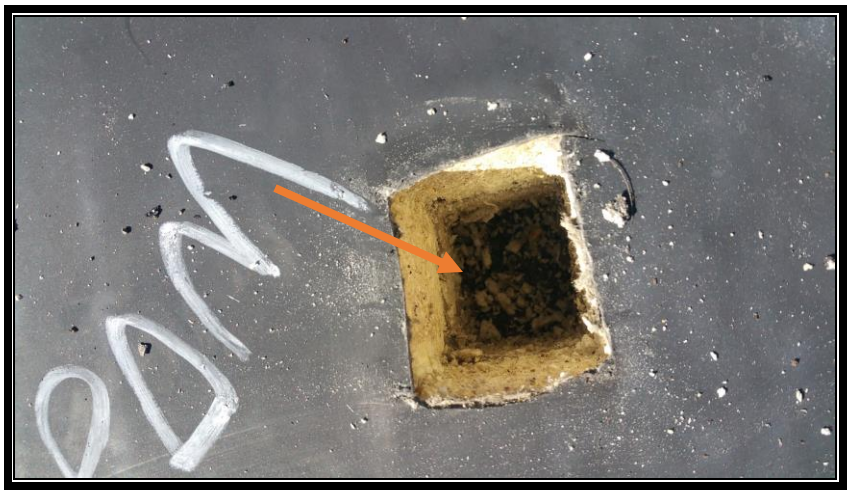
WHITE PLAINS CITY SCHOOL DISTRICT - HIGH SCHOOL
SED Project #: 66220001-0016-021
White Plains City School District - High School
550 North Street
White Plains, NY 10605
914-422-2064

JB-106328-00

PV 5 0

BSL-001

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS NY
PHOTODOCUMENTATION LOG



Photograph 1: Typical Roofing System for Roofs A, B & C – Tar on Concrete, Roofing Felt Paper, Roofing Rubber Membrane w/ Glue & Tar on Roofing Membrane.

Photograph 2: Typical Roofing System for Roof G & Café Roof – Gypsum Planking on Metal Deck, Roofing Felt Paper, Brown Insulation, Roofing Rubber Membrane w/ Glue & Tar on Roofing Membrane.

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS NY
PHOTODOCUMENTATION LOG

Photograph 3: Inside Electrical Room – Materials found inside the Electrical Room which may be affected by SOW were Non-ACM sheetrock, joint compound, fittings insulation, wrap around fiberglass pipe, cinderblock and 1'x1'pinhole ceiling tiles with mastic.

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS NY
PHOTODOCUMENTATION LOG

Metal Panel (non-suspect) with assoc. Exterior Caulking (assumed ACM).

Concrete (non-suspect)

Limestone Slab (non-suspect), Weatherproofing Material behind slab (assumed ACM)

Photograph 4: Exterior façade outside electrical room.

Louis Berger
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914-798-3710 Fax 914-592-1734 www.louisberger.com

April 6, 2017

Mr. Frank Stefanelli
Director of Facilities
White Plains Public Schools
580 North Street
White Plains, NY 10605

Subject: Letter Report for Limited Asbestos Survey Services in Conjunction with the Steam Tunnel Project at the White Plains High School, 550 North Street, White Plains, NY

Dear Mr. Stefanelli:

Louis Berger (Berger) has completed a limited asbestos materials survey at the White Plains High School specifically in the steam tunnels. The limited asbestos survey was conducted on March 29 through 30, 2017 by Marvin Luccioni, a NYS DOL Licensed Asbestos Inspector (Cert# 03-11021). The limited asbestos survey included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) for the upcoming steam tunnel project. Berger inspected the following suspect materials in order to address specific concerns and suspect materials to be impacted by the current scope of work (SOW).

Homogeneous Groups	Location(s)	Material Description	No. of Samples	Results	Quantity
White Plains High School 550 North Street, White Plains, NY					
01	Bldg. A Steam Tunnels	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
02	Bldg. A Steam Tunnels	Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)	3	NAD	---
03	Bldg. A Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---
04	Bldg. A Steam Tunnels	Cloth Fabric over FG Pipe Ins. (Beige)	3	NAD	---
05	Bldg. A Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
06	**Bldg. B Steam Tunnels**	**Mudded Joints to FG Pipe Ins. (Gray)**	**3**	**33.30% Chrysotile**	**25 LF**
07	**Bldg. B Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**16.00% Chrysotile**	**50 SF**
08	Bldg. B Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---

09	Bldg. B Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
10	**Bldg. C Steam Tunnels**	**Mudded Joints to FG Pipe Ins. (Gray)**	**3**	**18.20% Chrysotile**	**35 LF**
11	**Bldg. C Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**28.60% Chrysotile**	**45 SF**
12	Bldg. C Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	<1.00% Chrysotile	---
13	Bldg. C Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
14	Bldg. D Steam Tunnels	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
15	**Bldg. D Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**28.60% Chrysotile**	**55 SF**
16	Bldg. D Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---
17	Bldg. D Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
18	**Bldg. E Steam Tunnels**	**Mudded Joints to FG Pipe Ins. (Gray)**	**3**	**27.30% Chrysotile**	**25 LF**
19	**Bldg. E Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**22.20% Chrysotile**	**55 SF**
20	Bldg. E Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---
21	Bldg. E Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
22	Bldg. E Steam Tunnels	Paper (Pipe) Ins. Debris on Ground (White)	3	NAD	---
23	Bldg. E Steam Tunnels	Cementitious Material on Ground (Gray)	2	NAD	---
24	Bldg. F Steam Tunnels	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
25	Bldg. F Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	<1.00% Chrysotile	---
26	Bldg. F Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
27	Bldg. F Pool Mechanical Room (Associated with AHU-1)	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
28	Bldg. F Pool Mechanical Room (Associated with AHU-1)	Vibration Cloth (Black)	2	NAD	---

29	Bldg. F Pool Mechanical Room (Associated with AHU-1)	Cloth Fabric to FG Duct Work Ins. (Beige)	2	NAD	---
30	Bldg. F Pool Mechanical Room (Associated with Abandoned AHU)	Vibration Cloth (Black)	2	NAD	---
31	Penthouse Mechanical Room E219A	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
32	Penthouse Mechanical Room E219A	Vapor Barrier Material on FG Pipe Ins. (Black)	3	<1.00% Chrysotile	---
33	Penthouse Mechanical Room E219A	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
34	Penthouse Mechanical Room E219A	Ceiling Plaster, Gray Only	3	NAD	---
35	Penthouse Mechanical Room E219A	Cloth Fabric to Ductwork FG Ins. (Beige)	2	NAD	---
36	Penthouse Mechanical Room E219A	Gaskets (Green)	2	NAD	---

NAD = No Asbestos Detected

Notes:

1. Quantities are estimations and should be confirmed by the contractor during the pre-abatement walkthrough.
2. Steam tunnels which have standing water must be pumped out and filtered using a filtration system by the contractor which then should be treated as contaminated ACM.

It is our hope that the information provided in this letter has met the project requirements. Thank you for the opportunity to provide you and your staff with our continued services. Please contact me at 212-612-7938 if you have any questions or require any additional information.

Sincerely,

Louis Berger

Marvin Luccioni
Senior Environmental Specialist, Emergency Management & IH Services

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order: 031708607
Customer ID: LBAP78
Customer PO:
Project ID:

Attention: Louis Berger U.S., Inc
48 Wall St.
New York, NY 10005

Phone: (212) 612-7900
Fax:
Received Date: 03/31/2017 7:40 PM
Analysis Date: 04/02/2017 - 04/03/2017
Collected Date: 03/29/2017

Project: 2011353.061/ W.P.S.D./ WHITE PLANS H.S @ 550 NORTH ST., WHITE PLAINS, NY/ STEAM TUNNELS

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos
Sample ID 01 *031708607-0001*		**Description** BLDG. A - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	45.00% Min. Wool	12.00% Gypsum 43.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 02 *031708607-0002*		**Description** BLDG. A - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Gray	65.00% Min. Wool	35.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 03 *031708607-0003*		**Description** BLDG. A - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Tan	55.00% Min. Wool	25.00% Gypsum 20.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 04 *031708607-0004*		**Description** BLDG. A - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	45.00% Min. Wool	15.00% Gypsum 40.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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EMSL Order: 031708607
Customer ID: LBAP78
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Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos
Sample ID 05 *031708607-0005*		**Description** BLDG. A - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	45.00% Min. Wool	45.00% Gypsum 10.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 06 *031708607-0006*		**Description** BLDG. A - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Tan	55.00% Min. Wool	25.00% Gypsum 20.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 07 *031708607-0007*		**Description** BLDG. A - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black		100.00% Other	**None Detected**
Sample ID 08 *031708607-0008*		**Description** BLDG. A - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black		100.00% Other	**None Detected**
Sample ID 09 *031708607-0009*		**Description** BLDG. A - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black		100.00% Other	**None Detected**
Sample ID 10 *031708607-0010*		**Description** BLDG. A - STEAM TUNNELS - CLOTH FABRIC OVER FG PIPE INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Brown	85.00% Cellulose	15.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 11 *031708607-0011*		**Description** BLDG. A - STEAM TUNNELS - CLOTH FABRIC OVER FG PIPE INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Tan	86.00% Cellulose	14.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 12 *031708607-0012*		**Description** BLDG. A - STEAM TUNNELS - CLOTH FABRIC OVER FG PIPE INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/03/2017	Tan	80.00% Cellulose	20.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 13 *031708607-0013*		**Description** BLDG. A - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Tan		100.00% Other	**None Detected**
Sample ID 14 *031708607-0014*		**Description** BLDG. A - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Tan		100.00% Other	**None Detected**
Sample ID 15 *031708607-0015*		**Description** BLDG. B - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Gray	None	15.00% Ca Carbonate 51.70% Non-fibrous (other)	**33.30% Chrysotile**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 16 *031708607-0016*		**Description** BLDG. B - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 17 *031708607-0017*		**Description** BLDG. B - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 18 *031708607-0018*		**Description** BLDG. B - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Gray	25.00% Cellulose	59.00% Non-fibrous (other)	**16.00% Chrysotile**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 19 *031708607-0019*		**Description** BLDG. B - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 20 *031708607-0020*		**Description** BLDG. B - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 21 *031708607-0021*		**Description** BLDG. B - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Brown/ Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Brown/ Gray		100.00% Other	**None Detected**
Sample ID 22 *031708607-0022*		**Description** BLDG. B - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Brown/ Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Brown/ Gray		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 23 *031708607-0023*		**Description** BLDG. B - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Brown/ Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Brown/ Gray		100.00% Other	**None Detected**
Sample ID 24 *031708607-0024*		**Description** BLDG. B - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Tan		100.00% Other	**None Detected**
Sample ID 25 *031708607-0025*		**Description** BLDG. B - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Tan		100.00% Other	**None Detected**
Sample ID 26 *031708607-0026*		**Description** BLDG. C - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	10.00% Cellulose	30.00% Gypsum 41.80% Non-fibrous (other)	**18.20% Chrysotile**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 27 *031708607-0027*		**Description** BLDG. C - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity**			
PLM NYS 198.1 Friable	04/02/2017				**Positive Stop (Not Analyzed)**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 28 *031708607-0028*		**Description** BLDG. C - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity**			
PLM NYS 198.1 Friable	04/02/2017				**Positive Stop (Not Analyzed)**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 29 *031708607-0029*		**Description**	BLDG. C - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY		
		Homogeneity	Homogeneous		
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Brown	None	71.40% Non-fibrous (other)	**28.60% Chrysotile**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 30 *031708607-0030*		**Description**	BLDG. C - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY		
		Homogeneity			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 31 *031708607-0031*		**Description**	BLDG. C - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY		
		Homogeneity			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 32 *031708607-0032*		**Description**	BLDG. C - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK		
		Homogeneity	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Tan		100.00% Other	**None Detected**
Sample ID 33 *031708607-0033*		**Description**	BLDG. C - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK		
		Homogeneity	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black	None	100.00% Other	**<1.00% Chrysotile**
Sample ID 34 *031708607-0034*		**Description**	BLDG. C - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK		
		Homogeneity	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos
Sample ID 35		**Description**	BLDG. C - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE		
031708607-0035		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Yellow		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Yellow		100.00% Other	**None Detected**
Sample ID 36		**Description**	BLDG. C - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE		
031708607-0036		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Yellow		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Yellow		100.00% Other	**None Detected**
Sample ID 37		**Description**	BLDG. D - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY		
031708607-0037		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	04/02/2017	Gray	60.00% Min. Wool	10.00% Gypsum 30.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 38		**Description**	BLDG. D - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY		
031708607-0038		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	04/02/2017	Gray	60.00% Min. Wool	12.00% Gypsum 28.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 39		**Description**	BLDG. D - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY		
031708607-0039		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	04/03/2017	Gray	45.00% Min. Wool	25.00% Gypsum 30.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 40		**Description**	BLDG. D - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY/BROWN		
031708607-0040		**Homogeneity**	Homogeneous		
PLM NYS 198.1 Friable	04/02/2017	Gray	4.00% Cellulose 40.00% Min. Wool	27.40% Non-fibrous (other)	**28.60% Chrysotile**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 41 *031708607-0041*		**Description** / **Homogeneity**	BLDG. D - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY/BROWN		
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 42 *031708607-0042*		**Description** / **Homogeneity**	BLDG. D - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY/BROWN		
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 43 *031708607-0043*		**Description**	BLDG. D - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK		
		Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray		100.00% Other	**None Detected**
Sample ID 44 *031708607-0044*		**Description**	BLDG. D - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK		
		Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Tan		100.00% Other	**None Detected**
Sample ID 45 *031708607-0045*		**Description**	BLDG. D - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK		
		Homogeneity	Homogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Tan		100.00% Other	**None Detected**
Sample ID 46 *031708607-0046*		**Description**	BLDG. D - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE		
		Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Tan		100.00% Other	**None Detected**

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EMSL Order: 031708607
Customer ID: LBAP78
Customer PO:
Project ID:

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 47 *031708607-0047*		**Description** BLDG. D - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Tan		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Tan		100.00% Other	**None Detected**
Sample ID 48 *031708607-0048*		**Description** BLDG. E - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Gray	None	72.70% Non-fibrous (other)	**27.30% Chrysotile**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 49 *031708607-0049*		**Description** BLDG. E - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 50 *031708607-0050*		**Description** BLDG. E - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 51 *031708607-0051*		**Description** BLDG. E - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Brown	30.00% Cellulose	47.80% Non-fibrous (other)	**22.20% Chrysotile**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 52 *031708607-0052*		**Description** BLDG. E - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 53 *031708607-0053*		**Description** BLDG. E - STEAM TUNNELS - DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY **Homogeneity**			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 54 *031708607-0054*		**Description** BLDG. E - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE, BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Black		100.00% Other	**None Detected**
Sample ID 55 *031708607-0055*		**Description** BLDG. E - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE, BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Black		100.00% Other	**None Detected**
Sample ID 56 *031708607-0056*		**Description** BLDG. E - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE, BLACK **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Brown/ Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Brown/ Black		100.00% Other	**None Detected**
Sample ID 57 *031708607-0057*		**Description** BLDG. E - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Yellow		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Yellow		100.00% Other	**None Detected**
Sample ID 58 *031708607-0058*		**Description** BLDG. E - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Yellow		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Yellow		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 59 *031708607-0059*		**Description** BLDG. E - STEAM TUNNELS - PAPER INS. DEBRIS ON GROUND, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Tan	80.00% Cellulose	20.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 60 *031708607-0060*		**Description** BLDG. E - STEAM TUNNELS - PAPER INS. DEBRIS ON GROUND, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Tan	70.00% Cellulose	30.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 61 *031708607-0061*		**Description** BLDG. E - STEAM TUNNELS - PAPER INS. DEBRIS ON GROUND, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/03/2017	White	90.00% Cellulose	10.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 62 *031708607-0062*		**Description** BLDG. E - STEAM TUNNELS - CEMENTITIOUS MATERIAL ON GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/02/2017	Gray/ Tan		40.00% Non-fibrous (other) 60.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 63 *031708607-0063*		**Description** BLDG. E - STEAM TUNNELS - CEMENTITIOUS MATERIAL ON GROUND, GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable No Vermiculite Detected.	04/03/2017	Gray		46.00% Non-fibrous (other) 54.00% Quartz	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos	Fibrous	Non-Fibrous	Asbestos
Sample ID 64		**Description**	BLDG. F - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY			
031708607-0064		**Homogeneity**	Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Gray	45.00%	Min. Wool	20.00% Gypsum 35.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.						
PLM NYS 198.6 VCM						**Not Analyzed**
PLM NYS 198.6 NOB						**Not Analyzed**
TEM NYS 198.4 NOB						**Not Analyzed**
Sample ID 65		**Description**	BLDG. F - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY			
031708607-0065		**Homogeneity**	Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Gray/ Tan	40.00%	Min. Wool	32.00% Gypsum 28.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.						
PLM NYS 198.6 VCM						**Not Analyzed**
PLM NYS 198.6 NOB						**Not Analyzed**
TEM NYS 198.4 NOB						**Not Analyzed**
Sample ID 66		**Description**	BLDG. F - STEAM TUNNELS - MUDDED JOINTS TO FG PIPE INS., GRAY			
031708607-0066		**Homogeneity**	Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Gray/ Tan	55.00%	Min. Wool	25.00% Gypsum 20.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.						
PLM NYS 198.6 VCM						**Not Analyzed**
PLM NYS 198.6 NOB						**Not Analyzed**
TEM NYS 198.4 NOB						**Not Analyzed**
Sample ID 67		**Description**	BLDG. F - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE, BLACK			
031708607-0067		**Homogeneity**	Heterogeneous			
PLM NYS 198.1 Friable						**Not Analyzed**
PLM NYS 198.6 VCM						**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Tan/ Black			100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Tan/ Black			100.00% Other	**None Detected**
Sample ID 68		**Description**	BLDG. F - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE, BLACK			
031708607-0068		**Homogeneity**	Heterogeneous			
PLM NYS 198.1 Friable						**Not Analyzed**
PLM NYS 198.6 VCM						**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Black			100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Black		None	100.00% Other	**<1.00% Chrysotile**
Sample ID 69		**Description**	BLDG. F - STEAM TUNNELS - VAPOR BARRIER MATERIAL ON FG PIPE, BLACK			
031708607-0069		**Homogeneity**	Homogeneous			
PLM NYS 198.1 Friable						**Not Analyzed**
PLM NYS 198.6 VCM						**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Brown/ Black			100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Brown/ Black		None	100.00% Other	**<1.00% Chrysotile**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 70 *031708607-0070*		**Description** BLDG. F - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Brown/ White		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Brown/ White		100.00% Other	**None Detected**
Sample ID 71 *031708607-0071*		**Description** BLDG. F - STEAM TUNNELS - SEALANT TO FG PIPE INS. SEAMS, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ White		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ White		100.00% Other	**None Detected**
Sample ID 72 *031708607-0072*		**Description** BLDG. F - POOL MECH RM. - MUDDED JOINTS TO FG. PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	40.00% Min. Wool	35.00% Gypsum 25.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 73 *031708607-0073*		**Description** BLDG. F - POOL MECH RM. - MUDDED JOINTS TO FG. PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	35.00% Min. Wool	42.00% Gypsum 23.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 74 *031708607-0074*		**Description** BLDG. F - POOL MECH RM. - MUDDED JOINTS TO FG. PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Tan	45.00% Min. Wool	25.00% Gypsum 30.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 75 *031708607-0075*		**Description** BLDG. F - POOL MECH RM. - VIBRATION CLOTH, BLACK **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black		100.00% Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 76 *031708607-0076*		**Description** BLDG. F - POOL MECH RM. - VIBRATION CLOTH, BLACK **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Black		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Black		100.00% Other	**None Detected**
Sample ID 77 *031708607-0077*		**Description** BLDG. F - POOL MECH RM. - CLOTH FABRIC TO FG DUCT WORK INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Brown	80.00% Cellulose	20.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 78 *031708607-0078*		**Description** BLDG. F - POOL MECH RM. - CLOTH FABRIC TO FG DUCT WORK INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Brown	70.00% Cellulose	30.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 79 *031708607-0079*		**Description** BLDG. F - POOL MECH RM. - VIBRATION CLOTH, BLACK **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Brown	95.00% Cellulose	5.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 80 *031708607-0080*		**Description** BLDG. F - POOL MECH RM. - VIBRATION CLOTH, BLACK **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Brown	45.00% Min. Wool	25.00% Gypsum 30.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 81 *031708607-0081*		**Description** PENTHOUSE MECH RM. E-219A - MUDDED JOINTS TO FG PIPE INS., GRAY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Tan	6.00% Cellulose 50.00% Min. Wool	25.00% Gypsum 19.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color		Non-Asbestos Fibrous		Non-Fibrous	Asbestos
Sample ID 82		**Description**	PENTHOUSE MECH RM. E-219A - MUDDED JOINTS TO FG PIPE INS., GRAY				
031708607-0082		**Homogeneity**	Homogeneous				
PLM NYS 198.1 Friable	04/02/2017	Tan	35.00%	Min. Wool	45.00%	Gypsum 20.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.							
PLM NYS 198.6 VCM							**Not Analyzed**
PLM NYS 198.6 NOB							**Not Analyzed**
TEM NYS 198.4 NOB							**Not Analyzed**
Sample ID 83		**Description**	PENTHOUSE MECH RM. E-219A - MUDDED JOINTS TO FG PIPE INS., GRAY				
031708607-0083		**Homogeneity**	Homogeneous				
PLM NYS 198.1 Friable	04/03/2017	Tan	43.00%	Min. Wool	28.00% 29.00%	Gypsum Non-fibrous (other)	**None Detected**
No Vermiculite Detected.							
PLM NYS 198.6 VCM							**Not Analyzed**
PLM NYS 198.6 NOB							**Not Analyzed**
TEM NYS 198.4 NOB							**Not Analyzed**
Sample ID 84		**Description**	PENTHOUSE MECH RM. E-219A - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK				
031708607-0084		**Homogeneity**	Heterogeneous				
PLM NYS 198.1 Friable							**Not Analyzed**
PLM NYS 198.6 VCM							**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Yellow			100.00%	Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Yellow			100.00%	Other	**None Detected**
Sample ID 85		**Description**	PENTHOUSE MECH RM. E-219A - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK				
031708607-0085		**Homogeneity**	Heterogeneous				
PLM NYS 198.1 Friable							**Not Analyzed**
PLM NYS 198.6 VCM							**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Yellow			100.00%	Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Yellow		None	100.00%	Other	**<1.00% Chrysotile**
Sample ID 86		**Description**	PENTHOUSE MECH RM. E-219A - VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK				
031708607-0086		**Homogeneity**	Homogeneous				
PLM NYS 198.1 Friable							**Not Analyzed**
PLM NYS 198.6 VCM							**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Yellow			100.00%	Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Yellow		None	100.00%	Other	**<1.00% Chrysotile**
Sample ID 87		**Description**	PENTHOUSE MECH RM. E-219A - SEALANT TO FG PIPE INS., SEAMS, WHITE				
031708607-0087		**Homogeneity**	Heterogeneous				
PLM NYS 198.1 Friable							**Not Analyzed**
PLM NYS 198.6 VCM							**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Yellow			100.00%	Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Yellow			100.00%	Other	**None Detected**

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Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 88 *031708607-0088*		**Description** PENTHOUSE MECH RM. E-219A - SEALANT TO FG PIPE INS., SEAMS, WHITE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	04/02/2017	Gray/ Yellow	100.00% Other		**Inconclusive: None Detected**
TEM NYS 198.4 NOB	04/03/2017	Gray/ Yellow	100.00% Other		**None Detected**
Sample ID 89 *031708607-0089*		**Description** PENTHOUSE MECH RM. E-219A - CEILING PLASTER, GRAY ONLY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Gray	None	100.00% Non-fibrous (other) Vermiculite Present	
Surfacing Material containing vermiculite. NYS requires ELAP method 198.8.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 90 *031708607-0090*		**Description** PENTHOUSE MECH RM. E-219A - CEILING PLASTER, GRAY ONLY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Brown/ Gray	None	100.00% Non-fibrous (other) Vermiculite Present	
Surfacing Material containing vermiculite. NYS requires ELAP method 198.8.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 91 *031708607-0091*		**Description** PENTHOUSE MECH RM. E-219A - CEILING PLASTER, GRAY ONLY **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Brown	None	100.00% Non-fibrous (other) Vermiculite Present	
Surfacing Material containing vermiculite. NYS requires ELAP method 198.8.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 92 *031708607-0092*		**Description** PENTHOUSE MECH RM. E-219A - CLOTH FABRIC TO DUCT WORK FG INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Brown	45.00% Cellulose	55.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 93 *031708607-0093*		**Description** PENTHOUSE MECH RM. E-219A - CLOTH FABRIC TO DUCT WORK FG INS., BEIGE **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Brown	54.00% Cellulose	46.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 04/03/2017 19:08:19

EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018

Tel/Fax: (212) 290-0051 / (212) 290-0058

http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order:	031708607
Customer ID:	LBAP78
Customer PO:	
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 94 *031708607-0094*		**Description** PENTHOUSE MECH RM. E-219A - GASKETS, GREEN **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/02/2017	Green	12.00% Cellulose	88.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 95 *031708607-0095*		**Description** PENTHOUSE MECH RM. E-219A - GASKETS, GREEN **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	04/03/2017	Green	15.00% Cellulose 8.00% Glass	77.00% Non-fibrous (other)	**None Detected**
No Vermiculite Detected.					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 04/03/2017 19:08:19

EMSL Analytical, Inc.
307 West 38th Street New York, NY 10018
Tel/Fax: (212) 290-0051 / (212) 290-0058
http://www.EMSL.com / manhattanlab@emsl.com

EMSL Order:	031708607
Customer ID:	LBAP78
Customer PO:	
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

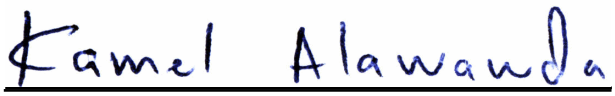
The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods . The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

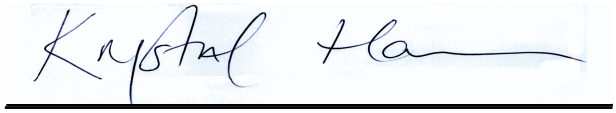
Sample Receipt Date:	3/31/2017	Sample Receipt Time:	7:40 PM
Analysis Completed Date:	4/2/2017	Analysis Completed Time:	5:34 PM

Analyst(s):

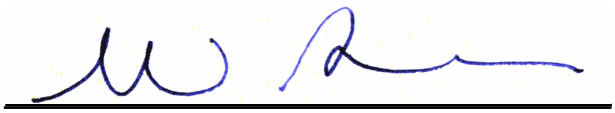
Daena Charles PLM NYS 198.1 Friable (31)



Kamel Alawawda PLM NYS 198.1 Friable (13)



Krystal Harris PLM NYS 198.6 NOB (37)



Wioletta Bis TEM NYS 198.4 NOB (37)

Samples reviewed and approved by:

James Hall, Laboratory Manager
or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non-asbestos containing.
All samples examined for the presence of vermiculite when analyzed via NYS 198.1.
-NYS Guidelines for Vermiculite containing samples are available at http ://www.wadsworth.org/labcert/elapcert/forms/ VermiculiteInterimGuidance_Rev070913.pdf EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations . Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.
This report must not be used by the client to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation .

Samples analyzed by EMSL Analytical, Inc. New York, NY NYS ELAP 11506

Initial Report From: 04/03/2017 19:08:19

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 201353.061
CLIENT: W.P.S.D

LOCATION(S) SURVEYED: STEAM TUNNELS
PROPOSED PROJECT: REPAIR
DATE(S) OF INSPECTION: 03/29-30/17
Inspector(s) M. LUCCIONI

PROJECT SITE: WHITE PLAINS H.S @ 550 NORTH ST., WHITE PLAINS, NY
Project Manager:

LOUIS BERGER
TELEPHONE N0. : (212) 612-7900 FAX N0.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO:
MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
1	01	MUDDED JOINTS TO FG PIPE INS., GRAY	BLDG. A – STEAM TUNNELS		
↓	02	↓	↓		
↓	03	↓	↓		
2	04	DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY	↓		
↓	05	↓	↓		
↓	06	↓	↓		
3	07	VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK	↓		
↓	08	↓	↓		
↓	09	↓	↓		
4	10	CLOTH FABRIC OVER FG PIPE INS., BEIGE	↓		
↓	11	↓	↓		
↓	12	↓	↓		

CLERK'S OFFICE RECEIVED 2017 MAR 31 PM 7:40

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
MARVIN LUCCIONI		03/31/17	15:00 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Karen Hultman		3/31/17	7:48 AM/PM			/ /	AM/PM			/ /	AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2011353.061

CLIENT: W.P.S.D

LOCATION(S) SURVEYED: STEAM TUNNELS

PROPOSED PROJECT: REPAIR

DATE(S) OF INSPECTION: 03/29-30/17

PROJECT SITE: WHITE PLAINS H.S @ 550 NORTH ST., WHITE PLAINS, NY

Project Manager:

Inspector(s) M. LUCCIONI

LOUIS BERGER
TELEPHONE N0. : (212) 612-7900 FAX N0.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
5	13	SEALANT TO FG PIPE INS. SEAMS, WHITE	BLDG. A - STEAM TUNNELS		
↓	14	↓	↓		
6	15	MUDDED JOINTS TO FG PIPE INS, GRAY	BLDG. B - STEAM TUNNELS		
↓	16	↓	↓		
↓	17	↓	↓		
7	18	DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY	↓		
↓	19	↓	↓		
↓	20	↓	↓		
8	21	VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK	↓		
↓	22	↓	↓		
↓	23	↓	↓		
9	24	SEALANT TO FG PIPE INS. SEAMS, WHITE	↓		

2017 MAR 31 PM 7:40 RECEIVED

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM
MARVIN LUCCIONI		03/31/17	15:00 AM/PM								
Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ /	AM/PM
Keren Mutnal		3/31/17	7:40 AM/PM								

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

4/3/17

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LOUIS BERGER

LB PROJ 2011353.061

CLIENT: W.P.S.D

LOCATION(S) SURVEYED: STEAM TUNNELS

PROPOSED PROJECT: REPAIR

DATE(S) OF INSPECTION: 03/29-30/17

Inspector(s) M. LUCCIONI

PROJECT SITE: WHITE PLAINS H.S & 550 NORTH ST., WHITE PLAINS, NY

Project Manager:

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME: ☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
9	25	SEALANT TO FG PIPE INS. SEAMS, WHITE	BLDG. B - STEAM TUNNELS		
10	26	MUDDED JOINTS TO FG PIPE INS., GRAY	BLDG. C - STEAM TUNNELS		
↓	27	↓	↓	↓	↓
↓	28	↓	↓	↓	↓
11	29	DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY	↓	↓	↓
↓	30	↓	↓	↓	↓
↓	31	↓	↓	↓	↓
12	32	VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK	↓	↓	↓
↓	33	↓	↓	↓	↓
↓	34	↓	↓	↓	↓
13	35	SEALANT TO FG PIPE INS. SEAMS, WHITE	↓	↓	↓
↓	36	↓	↓	↓	↓

2017 MAR 31 PM 7:40 RECEIVED

CHAIN OF CUSTODY

Relinquished by: (print) MARVIN LUCCIONI	(Sign)	03/31/17	15:00 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign) / / AM/PM
Received by: (print)	(Sign)	3/31/17	7:40 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print)	(Sign) / / AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

4/3/17

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2011353.061
CLIENT: W.P.S.D

LOCATION(S) SURVEYED : STEAM TUNNELS
PROPOSED PROJECT : REPAIR
DATE(S) OF INSPECTION: 03/29-30/17
Inspector(s) M. LUCCIONI

PROJECT SITE: WHITE PLAINS H.S @ 550 NORTH ST., WHITE PLAINS, NY
Project Manager:

LOUIS BERGER
TELEPHONE NO. : (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
14	37	MUDDED JOINTS TO FG PIPE INS., GRAY	BLDG. D - STEAM TUNNELS		
↓	38	↓	↓		
↓	39	↓	↓		
15	40	DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY/BROWN	↓		
↓	41	↓	↓		
↓	42	↓	↓		
16	43	VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK	↓		
↓	44	↓	↓		
↓	45	↓	↓		
17	46	SEALANT TO FG PIPE INS. SEAMS, WHITE	↓		
↓	47	↓	↓		
18	48	MUDDED JOINTS TO FG PIPE INS., GRAY	BLDG. E - STEAM TUNNELS		

2017 MAR 31 PM 7:40 MANHATTAN LAB RECEIVED

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
MARVIN LUCCIONI		03/31/17	15:00 AM/PM			/ / AM/PM				/ / AM/PM	
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Karen Hoffman		3/31/17	7:40 AM/PM			/ / AM/PM				/ / AM/PM	

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

4/13/17

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2011353.061
CLIENT: W.P.S.Q

LOCATION(S) SURVEYED: STEAM TUNNELS
PROPOSED PROJECT: REPAIR
DATE(S) OF INSPECTION: 03/29-30/17
Inspector(s) M. LUCCIONI

PROJECT SITE: WHITE PLAINS H.S & 550 NORTH ST., WHITE PLAINS, NY
Project Manager:

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
18	49	MUDDED JOINTS TO FG PIPE INS., GRAY	BLDG. E - STEAM TUNNELS		
↓	50	↓	↓		
19	51	DEBRIS INSIDE WALL PENETRATIONS & GROUND, GRAY			
↓	52	↓			
↓	53	↓			
20	54	VAPOR BARRIER MATERIAL ON FG PIPE, BLACK			
↓	55	↓			
↓	56	↓			
21	57	SEALANT TO FG PIPE INS. SEAMS, WHITE			
↓	58	↓			
22	59	PAPER INS. DEBRIS ON GROUND, WHITE			
↓	60	↓	↓		

2017 MAR 31 PM 7:40 RECEIVED

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
MARVIN LUCCIONI		03/31/17	1500 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	**(Sign)**			**Received by: (print)**	**(Sign)**			**Received by: (print)**	**(Sign)**		
Steven Autman		3/31/17	7:40 AM/PM			/ /	AM/PM			/ /	AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

3/31/17

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2011353.061
CLIENT: W.P.S.D

LOCATION(S) SURVEYED: STEAM TUNNELS
PROPOSED PROJECT: REPAIR
DATE(S) OF INSPECTION: 03/29-30/17
Inspector(s) M. LUCCIONI

PROJECT SITE: WHITE PLAINS H.S & 550 NORTH ST., WHITE PLAINS, NY
Project Manager:

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
22	61	PAPER INS. DEBRIS ON GROUND, WHITE	BLDG. - E - STEAM TUNNELS		
23	62	CEMENTITIOUS MATERIAL ON GROUND, GRAY	↓		
↓	63	↓	↓		
24	64	MUDDED JOINTS TO FG PIPE INS., GRAY	BLDG. F - STEAM TUNNELS		
↓	65	↓	↓		
↓	66	↓	↓		
25	67	VAPOR BARRIER MATERIAL ON FG PIPE, BLACK	↓		
↓	68	↓	↓		
↓	69	↓	↓		
26	70	SEALANT TO FG PIPE INS. SEAMS, WHITE	↓		
↓	71	↓	↓		
27	72	MUDDED JOINTS TO FG. PIPE INS., GRAY	- POOL MECH RM.		ASSOC. W/ AHU-1

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)		Relinquished by: (print)	(Sign)	
MARVIN LUCCIONI		03/31/17 15:00 AM/PM			/ / AM/PM			/ / AM/PM
Received by: (Print)	(Sign)		Received by: (print)	(Sign)		Received by: (print)	(Sign)	
Karen Pullman		3/31/17 7:46 AM/PM			/ / AM/PM			/ / AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

4/3/17

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2011353.061

CLIENT: W.P.S.D

PROJECT SITE: WHITE PLAINS H.S @ 550 NORTH ST., WHITE PLAINS, NY

Project Manager:

LOCATION(S) SURVEYED : STEAM TUNNELS

PROPOSED PROJECT : REPAIR

DATE(S) OF INSPECTION: 03/29-30/17

Inspector(s) M. LUCCIONI

LOUIS BERGER
TELEPHONE NO. : (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME: ☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
27	73	MUDDED JOINTS TO FG PIPE INS., GRAY	B104.F - POOL MECH RM.		ASSOC. W/ AHU-1
↓	74	↓	↓		↓
28	75	VIBRATION CLOTH, BLACK	↓		↓
↓	76	↓	↓		↓
29	77	CLOTH FABRIC TO FG DUCTWORK INS., BEIGE	↓		↓
↓	78	↓	↓		↓
30	79	VIBRATION CLOTH, BLACK	↓		ASSOC. W/ ABANDONED AHU
↓	80	↓	↓		↓
31	81	MUDDED JOINTS TO FG PIPE INS., GRAY	PENT HOUSE MECH RM. E-219A		
↓	82	↓	↓		
↓	83	↓	↓		
32	84	VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK	↓		

2017 MAR 31 PM 7:40 RECEIVED

CHAIN OF CUSTODY

Relinquished by: (print) MARVIN LUCCIONI	(Sign) [signature]	03/31/17	15:00 AM/PM	Relinquished by: (print)	(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ / AM/PM
Received by: (print) Karen Pacitti	(Sign) [signature]	3/31/17	7:48 AM/PM	Received by: (print)	(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ / AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

[initials] 4/3/17

LOUIS BERGER

ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

LB PROJ 2011353.061
CLIENT: W.P.S.D

LOCATION(S) SURVEYED : STEAM TUNNELS
PROPOSED PROJECT : REPAIR
DATE(S) OF INSPECTION: 03/29-30/17
Inspector(s) M. LUCCIONI

PROJECT SITE: WHITE PLAINS H.S & 550 NORTH ST., WHITE PLAINS, NY
Project Manager:

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TELEPHONE NO. : (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street, 16 Floor, New York, NY 10005

RESULTS TO: MLUCCIONI@LOUISBERGER.COM

TURNAROUND TIME:
☐ 4 HR. ☐ 24 HRS. ☐ 48 HRS. ☒ 72 HRS.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
32	85	VAPOR BARRIER MATERIAL ON FG PIPE INS., BLACK	PENTHOUSE MECH RM. E-214A		
↓	86	↓	↓		
33	87	SEALANT TO FG PIPE INS., SEAMS, WHITE			
↓	88	↓			
34	89	CEILING PLASTER, GRAY ONLY			
↓	90	↓			
↓	91	↓			
35	92	CLOTH FABRIC TO DUCTWORK FG INS., BEIGE			
↓	93	↓			
36	94	GASKETS, GREEN			
↓	95	↓	↓		

2017 MAR 31 PM 7:40

CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
MARVIN LUCCIONI		03/31/17	15:00 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Karen Hallmark		3/31/17	7:40 AM/PM			/ /	AM/PM			/ /	AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

4/1/17

Louis Berger
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914-798-3710 Fax 914-592-1734 www.louisberger.com

May 17, 2017

Mr. Frank Stefanelli
Director of Facilities
White Plains Public Schools
580 North Street
White Plains, NY 10605

Subject: Letter Report for Limited Asbestos Survey Services in Conjunction with the Corridor C Locker Project at the White Plains High School, 550 North Street, White Plains, NY

Dear Mr. Stefanelli:

Louis Berger (Berger) has completed a limited asbestos materials survey at the White Plains High School for the Corridor C Lockers project. The limited asbestos survey was conducted on May 2, 2017 by Marvin Luccioni, a NYS DOL Licensed Asbestos Inspector (Cert# 03-11021). The limited asbestos survey included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) for the upcoming Corridor C Lockers project. Berger inspected the following suspect materials in order to address specific concerns and suspect materials to be impacted by the current scope of work (SOW).

Homogeneous Groups	Location(s)	Material Description	No. of Samples	Results	Quantity
White Plains High School 550 North Street, White Plains, NY					
01	**Bldg. C – Corridor C Lockers**	**Mudded Elbows to FG Pipe Insulation, Gray**	**3**	**21.10% Chrysotile**	**20 SF (2 SF per location)**
02	Bldg. C – Corridor C Lockers	Canvas over FG Pipe Insulation, Gray	3	NAD	---
03	Bldg. C – Corridor C Lockers	Mastic associated with 4" Brown Cove Base, Brown	2	NAD	---
04	Bldg. C – Corridor C Lockers	4" Brown Cove Base	2	NAD	---
05	Bldg. C – Corridor C Lockers	Particle Board (Above Lockers), Brown	2	NAD	---
06	**Custodians Office**	**Cementitious Panels, Gray**	**2**	**21.10% Chrysotile**	**112 SF**

NAD = No Asbestos Detected
Notes:

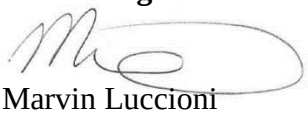
1. **Quantities are estimations and should be confirmed by the contractor during the pre-abatement walkthrough.**
2. **Quantities include debris from damaged elbows.**

Louis Berger
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914-798-3710 Fax 914-592-1734 www.louisberger.com

It is our hope that the information provided in this letter has met the project requirements. Thank you for the opportunity to provide you and your staff with our continued services. Please contact me at 212-612-7938 if you have any questions or require any additional information.

Sincerely,

Louis Berger



Marvin Luccioni
Senior Environmental Specialist, Emergency Management & IH Services

Attachments:

1. Company and Personnel Certifications
2. Chain of Custody's and Lab Results
3. Site Photographs

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

The Louis Berger Group, Inc.
16th Floor
48 Wall Street

New York, NY 10005

FILE NUMBER: 03-0940
LICENSE NUMBER: 29635
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 01/18/2017
EXPIRATION DATE: 01/31/2018

Duly Authorized Representative – Craig Napolitano:

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)

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

Louis Berger & Assoc., P.C.
16th Floor
48 Wall Street

New York, NY 10005

FILE NUMBER: 09-46778
LICENSE NUMBER: 46778
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 07/14/2016
EXPIRATION DATE: 07/31/2017

Duly Authorized Representative – Prakash Saha:

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)


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S
MARVIN LUCCIONI
CLASS(EXPIRES)
C ATEC(02/18) D INSP(02/18)
H PM (02/18) I PD (02/18)
CERT# 03-11021
DMV# 992503906
MUST BE CARRIED ON ASBESTOS PROJECTS

Louis Berger — ASBESTOS SURVEY DATA SHEET / CHAIN OF CUSTODY

PROJECT NO.: [redacted] 2011353.061.00
CLIENT: [redacted] W.P.S.D.
PROJECT SITE: [redacted] W.P.H.S
PROJECT ADDRESS: [redacted] 550 NORTH ST., WHITE PLAINS NY

DATE(S) OF INSPECTION: [redacted] 05/02/17
Project Manager: [redacted]
Inspector(s): [redacted] M. UCCIONI

LOUIS BERGER & ASSOC., P.C.
TELEPHONE NO.: (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street 16th Floor, New York, NY 10005

RESULTS TO: [redacted]

TURNAROUND TIME: 48 HRS' [redacted]

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
1	01	BIP & C — LOCKERS NEAR RM. C-111 HALLWAY	MUDDED ELBOWS TO F.G. PIPE INS., GRAY		BEHIND LOCKERS
↓	02	↓	↓		
↓	03	LOCKERS NEAR RM. G108 HALLWAY	↓		
2	04	LOCKERS NEAR RM. C-111 HALLWAY	CANVAS OVER F.G. PIPE INS.; GRAY		
↓	05	↓	↓		
↓	06	LOCKERS NEAR RM. C-108 HALLWAY	↓		
3	07	LOCKERS NEAR RM. C-111 HALLWAY	MATTIC ASSOC. W/ 4" BROWN COVE BASE, BROWN		
↓	08	LOCKERS NEAR RM. ↓ C-108 HALLWAY	↓		
4	09	LOCKERS NEAR RM. C-111 HALLWAY	4" BROWN COVEBASE		
↓	10	LOCKERS NEAR RM. C-108	↓		
5	11	LOCKERS NEAR RM. C-111 HALLWAY	PARTICLE BOARD, BROWN		
↓	12	LOCKERS NEAR RM. C-108	↓		

RECEIVED EMSL ANALYTICAL, INC. CARLE PLACE, NY 17 MAY 3 PM 1:37

CHAIN OF CUSTODY

Relinquished by: (print)	M. UCCIONI	(Sign)		5/3/17	1330 AM/PM	Relinquished by: (print)		(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ / AM/PM
Received by: (print)		(Sign)		5/3/17	1330 AM/PM	Received by: (print)		(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ / AM/PM

General Notes: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group. Lance Montefalcon 5/4/17

Louis Berger

ASBESTOS SURVEY DATA SHEET / CHAIN OF CUSTODY

PROJECT NO.: [redacted] 2011353.06L08

CLIENT: [redacted] W.P.S.D

PROJECT SITE: [redacted] W.P.H.S

PROJECT ADDRESS: [redacted] 550 NORTH ST., WHITE PLAINS NY

DATE(S) OF INSPECTION: [redacted] 05/03/17

Project Manager: [redacted]

Inspector(s): [redacted] M. Maccioni

LOUIS BERGER & ASSOC., P.C.
TELEPHONE NO. : (212) 612-7900 FAX NO.: (212) 363-4341
ADDRESS: 48 Wall Street 16th Floor, New York, NY 10005

RESULTS TO: [redacted]

TURNAROUND TIME: 48 hrs

HA	SAMPLE NO.	SAMPLE LOCATION	MATERIAL DESCRIPTION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
6	13	CUSTODIANS OFFICE	CEMENTITIOUS PANELS, GRAY		
↓	14	↓	↓		

RECEIVED
EMSL ANALYTICAL, INC.
CARLE PLACE, NY
17 MAY -3 PM 1:37

CHAIN OF CUSTODY

Relinquished by: (print)	M Maccioni	(Sign)		5/3/17	1530 AM/PM	Relinquished by: (print)		(Sign)	/ /	AM/PM	Relinquished by: (print)	(Sign)	/ / AM/PM
Received by: (print)	[redacted]	(Sign)		5/3/17	1530 AM/PM	Received by: (print)		(Sign)	/ /	AM/PM	Received by: (print)	(Sign)	/ / AM/PM

General Notes: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

Tomás Monte De Oca 5/4/17

5-4-17

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061705723
Customer ID: LBAP78
Customer PO: 2011353.061.00
Project ID:

Attention: Marvin Luccioni
Louis Berger U.S., Inc
48 Wall St.
New York, NY 10005

Phone: (718) 730-2741
Fax:
Received Date: 05/03/2017 1:37 PM
Analysis Date: 05/04/2017
Collected Date: 05/02/2017

Project: Z011353.061.00, W.P.S.D, 550 North St, White Plains, NY

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 1-01 *061705723-0001*		**Description** Bldg C-Lockers near Rm C-111 Hallway - Mudded Elbows to F.G. Pipe Ins, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	05/04/2017	Brown/ White/ Black	55.00% Min. Wool	15.00% Ca Carbonate 8.90% Non-fibrous (other)	**21.10% Chrysotile**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 1-02 *061705723-0002*		**Description** Bldg C-Lockers near Rm C-111 Hallway - Mudded Elbows to F.G. Pipe Ins, Gray **Homogeneity**			
PLM NYS 198.1 Friable	05/04/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 1-03 *061705723-0003*		**Description** Bldg C-Lockers near Rm G108 Hallway - Mudded Elbows to F.G. Pipe Ins, Gray **Homogeneity**			
PLM NYS 198.1 Friable	05/04/2017				**Positive Stop (Not Analyzed)**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 2-04 *061705723-0004*		**Description** Bldg C-Lockers near Rm C-111 Hallway - Canvas over F.G. Pipe Ins. Gray **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	05/04/2017	Gray/ Tan/ Various	25.00% Cellulose 35.00% Glass 20.00% Min. Wool	15.00% Matrix 5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 2-05 *061705723-0005*		**Description** Bldg C-Lockers near Rm C-111 Hallway - Canvas over F.G. Pipe Ins. Gray **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	05/04/2017	Gray/ Tan/ Various	30.00% Cellulose 30.00% Glass 15.00% Min. Wool	20.00% Matrix 5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 05/05/2017 09:30:25

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order:	061705723
Customer ID:	LBAP78
Customer PO:	2011353.061.00
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 2-06 *061705723-0006*		**Description** Bldg C-Lockers near Rm C-108 Hallway - Canvas over F.G. Pipe Ins. Gray **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	05/04/2017	Gray/ Tan/ Various	25.00% Cellulose 40.00% Glass 15.00% Min. Wool	15.00% Matrix 5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 3-07 *061705723-0007*		**Description** Bldg C-Lockers near Rm C-111 Hallway - Mastic Assoc. w/4" Brown Cove Base, Brown **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	05/04/2017	Brown	5.60% Wollastonite	94.40% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	05/04/2017	Brown		100.00% Other	**None Detected**
Sample ID 3-08 *061705723-0008*		**Description** Bldg C-Lockers near Rm C-108 Hallway - Mastic Assoc. w/4" Brown Cove Base, Brown **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	05/04/2017	Brown	11.00% Wollastonite	89.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	05/04/2017	Brown		100.00% Other	**None Detected**
Sample ID 4-09 *061705723-0009*		**Description** Bldg C-Lockers near Rm C-111 Hallway - 4" Brown Cove Base **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	05/04/2017	Brown		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	05/04/2017	Brown		100.00% Other	**None Detected**
Sample ID 4-10 *061705723-0010*		**Description** Bldg C-Lockers near Rm C-108 - 4" Brown Cove Base **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable					**Not Analyzed**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB	05/04/2017	Brown		100.00% Other	**Inconclusive: None Detected**
TEM NYS 198.4 NOB	05/04/2017	Brown		100.00% Other	**None Detected**
Sample ID 5-11 *061705723-0011*		**Description** Bldg C-Lockers near Rm C-111 Hallway - Particle Board, Brown **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	05/04/2017	Brown/ Tan/ White	65.00% Cellulose	20.00% Matrix 15.00% Non-fibrous (other)	**None Detected**
Inseparable paint / coating layer included in analysis					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 05/05/2017 09:30:25

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order:	061705723
Customer ID:	LBAP78
Customer PO:	2011353.061.00
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos
Sample ID 5-12 *061705723-0012*		**Description** Bldg C-Lockers near Rm C-108 - Particle Board, Brown **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	05/04/2017	Brown/ Tan/ White	70.00% Cellulose	25.00% Matrix 5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 6-13 *061705723-0013*		**Description** Custodians Office - Cementitious Panels, Gray **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	05/04/2017	Gray/ Tan/ White	None	30.00% Ca Carbonate 13.90% Non-fibrous (other) 35.00% Quartz	**21.10% Chrysotile**
Sample is Transite					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 6-14 *061705723-0014*		**Description** Custodians Office - Cementitious Panels, Gray **Homogeneity**			
PLM NYS 198.1 Friable	05/04/2017				**Positive Stop (Not Analyzed)**
Sample is Transite					
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From: 05/05/2017 09:30:25

EMSL Analytical, Inc.
528 Mineola Avenue Carle Place, NY 11514
Tel/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order:	061705723
Customer ID:	LBAP78
Customer PO:	2011353.061.00
Project ID:	

Test Report:Asbestos Analysis of Bulk Material

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods . The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

Sample Receipt Date:	5/3/2017	Sample Receipt Time:	1:37 PM
Analysis Completed Date:	5/4/2017	Analysis Completed Time:	4:52 PM

Analyst(s):

Tomas Montes De Oca PLM NYS 198.1 Friable (7)

Tomas Montes De Oca PLM NYS 198.6 NOB (4)

Keith McWilliams TEM NYS 198.4 NOB (4)

Samples reviewed and approved by:

Michelle McGowan, Laboratory Manager
or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non -asbestos containing.
All samples examined for the presence of vermiculite when analyzed via NYS 198.1.
-NYS Guidelines for Vermiculite containing samples are available at http ://www.wadsworth.org/labcert/elapcert/forms/ VermiculiteInterimGuidance_Rev070913.pdf EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations . Interpretation and use of test results are the responsibility of the client.
Samples were received in good condition unless otherwise noted.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation .

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NYS ELAP 11469

Initial Report From: 05/05/2017 09:30:25

Photo 1: Mudded Elbows behind Corridor C Lockers.

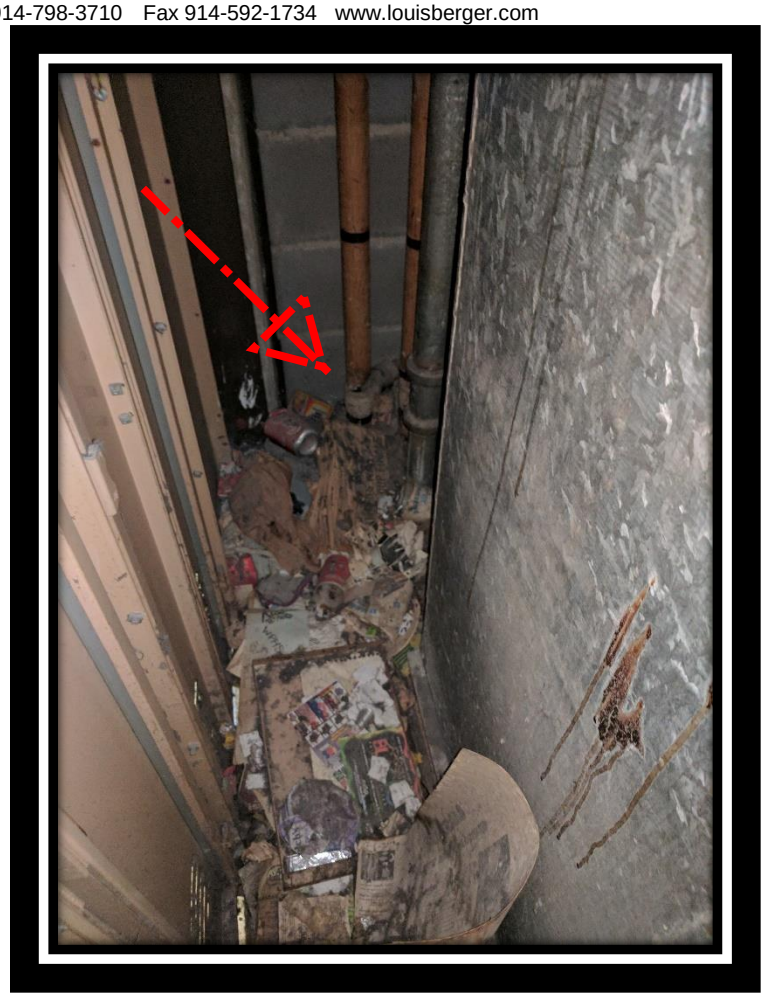


Photo 2: Mudded Elbows behind Corridor C Lockers.

Photo 3: Mudded Elbows behind Corridor C Lockers.

FINAL REPORT FOR
ASBESTOS INSPECTION SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Prepared for:

508 North Street
White Plains, NY 10605

Prepared by:

565 Taxter Road, 5th Floor
Elmsford, New York 10523
Tel. (914) 798-3710
Fax (914) 592-1734

Project No.: 2042261.030
Final Submission Date: February 6, 2018

Louis Berger
565 Taxter Road, 5th Floor, Elmsford, NY 10523
Tel 914 798 3710 Fax 914 592 1734 www.louisberger.com

February 6, 2018

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: **Final Report of Asbestos Inspection Services**
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger (Berger) has completed a material inspection at White Plains High School located at 550 North Street, White Plains, NY 10605. The inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) associated with the upcoming PA Replacement project at the White Plains High School.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

LOUIS BERGER (LB)

Craig Napolitano, CHMM
Vice President, Emergency Management & IH Services

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY

Berger has performed a material inspection for the presence or absence of Asbestos-Containing Materials (ACM) at the White Palins High School located at 550 North Street, White Plains, NY 10605. The intent of this inspection was to screen for Asbestos-Containing Materials (ACM) that may be impacted during the upcoming PA Replacement project at the White Plains High School.

Marvin Luccioni of LB performed this inspection on February 1st, 2018. Mr. Luccioni is licensed as a New York State Department of Labor (NYSDOL) Asbestos Inspector (Cert# 03-11021). The results of the visual inspection and bulk sample analysis determined that the following suspect ACM materials may be impacted by the upcoming PA Replacement project at the White Plains High School:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected on 02/02/18 by Berger indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected in **previous survey report** dated 03/29-30/17 by Louis Berger indicate that the following materials **contain asbestos** (greater than 1-percent);

- **Mudded Joints to FG Pipe Ins., Gray (Steam Tunnels to Bldg. B, C, D & E)[1]**
- **Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground, Gray (Steam Tunnels to Bldg. B, C, D & E)[1]**

Analytical results of the bulk samples collected in **previous survey report** dated 09/11/13 by Louis Berger indicate that the following materials **contain asbestos** (greater than 1-percent);

- **9"x9" Floor Tile (Auditorium)[1]**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)[1]**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)[1]**

As per 2016 AHERA, the following materials **contain asbestos** (greater than 1-percent);

- **9"x9" Floor Tile (Throughout)[1]**
- **Transit Soffit (Janitors Closet)[1]**

Note: 1. ACM will not be disturbed as part of the PA Replacement project.

Analytical results of the bulk samples collected on 02/02/18 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Glazed Brick Mortar, Gray
- Joint Compound, White

- Gypsum Board, White
- Plaster, Brown Coat

Analytical results of the bulk samples collected and/or visual examination on 10/13 & 27/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Screed, Gray (Roof C)
- Bottom Membrane, Black (Roof C)
- Felt Paper below Foam, Black (Roof C)
- Felt Paper on top of Foam, Black (Roof C)
- Perlite Insulation, Brown (Roof C)
- Top Membrane, Black (Roof C)
- Pitch Pocket Tar, Black (Roof C)
- Hatch Flashing, Black (Roof C)
- Screed, Gray (Roof A)
- Felt Paper below Foam, Black (Roof A)
- Felt Paper on top of Foam, Black (Roof A)
- Top Membrane, Black (Roof A)
- Screed, Gray (Roofs B, D, E & F)
- Felt Paper on Bottom of Foam, Black (Roofs B, D, E & F)
- Felt Paper on top of Foam, Black (Roofs B, D, E & F)
- Top Insulation Membrane, Black (Roofs B, D, E & F)
- Felt Paper on top of Roofing Membrane, Black (Roofs B, D, E & F)
- Cap Flashing Caulking, Gray (Roofs B, D, E & F)
- Perimeter Base Flashing, Black (Roofs B, D, E & F)
- Drain Flashing, Black (Roofs B, D, E & F)
- Tar on Mechanical Units, Black (Roofs B, D, E & F)
- Tar assoc. with Pitch Pockets at Ladder, Black (Roofs B, D, E & F)
- Mechanical Unit Flashing, Black (Roofs B, D, E & F)
- Hatch Flashing, Black (Roofs B, D, E & F)
- Canvas to FG to Drain Bowls, White (Throughout Interior)
- Cementitious Ceiling, White (Throughout Interior)
- Tectum Ceiling (Throughout Interior)

Analytical results of the bulk samples collected and/or visual examination on LB previous survey report dated 09/11/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Interior Brick Mortar, Grey
- Cinderblock Mortar, Grey
- 1’x1’ Pinhole Ceiling Tiles, White
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles, Brown
- Fittings Insulation assoc. with Fiberglass Pipe Insulation, Grey
- Wrap around Fiberglass Pipe Insulation, Brown

- Sheetrock, White
- Joint Compound assoc. with Sheetrock, White
- Caulking at Metal Exhaust Vent Edge, Grey
- Roof Decking (Gym Mech. Room Roof)
- Paper to Foam Insulation (Gym & Gym Mech. Roofs)
- Fiberboard Insulation (Gym & Gym Mech. Roofs)
- Fabric Barrier (Gym & Gym Mech. Roofs)
- Tar on Concrete Deck (Gym Roof)

Analytical results of the bulk samples collected in **previous survey report** dated 03/29-30/17 by Louis Berger indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Mudded Joints to FG Pipe Ins., Gray (Steam Tunnels to Bldg. A & F)
- Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground), Gray (Steam Tunnels to Bldg. A & F)
- Vapor Barrier Material on FG Pipe Ins., Black (Steam Tunnels to Bldg. A, B, C, D, E & F)
- Cloth Fabric over FG Pipe Ins., Beige (Steam Tunnels to Bldg. A)
- Sealant to FG Pipe Ins. Seams, White (Steam Tunnels to Bldg. A, B, C, D, E & F & Mech Rooms)
- Paper (Pipe) Ins. Debris on Ground, White (Steam Tunnels to Bldg. F)
- Cementitious Material on Ground, Gray (Steam Tunnels to Bldg. F)
- Vibration Cloth, Black (Bldg. F Mech Room)
- Cloth Fabric to FG Duct Work Ins., Beige (Bldg. F Mech Room)
- Ceiling Plaster, Gray
- Gaskets, Green

Analytical results of the bulk samples collected in **previous survey report** dated 09/11/13 by Louis Berger indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Baseboard Glue, Brown
- Baseboard Molding, Brown
- Mastic assoc. with 9”x9” Floor Tiles, Black
- 2’x4’ Ceiling Tiles, Gray
- Wall Ceramic Tile Grout, White
- Floor Ceramic Tile Grout, Brown
- Glazing at Entrance Aluminum Framing/Panels, White
- Interior Brick Mortar, Gray
- Cinderblock Mortar, Gray
- 1’x1’ Pinhole Ceiling Tiles, White
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles, Brown
- Glazing at Celestory Glass Panels bet. Rooms & Hallways, Gray
- Fitting Insulation assoc. with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown

- Sheetrock Walls/Ceiling, White
- Joint Compound assoc. with Sheetrock Walls, White
- Caulking at Metal Exhaust Vent Edges, Gray
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

The following materials as per 2017 AHERA, **did not contain asbestos** based on previous reporting and/or sampling

- 1'x1' Pinhole Pattern Ceiling Tile, White (Throughout Interior)
- 2'x4' Pinhole Ceiling Tiles, White (Throughout Interior)
- 1'x1' Gouged Ceiling Tiles, White (Throughout Interior)
- 2'x4' Small Pinhole Ceiling Tiles, White (Throughout Interior)
- 1'x1' Fissure Ceiling Tiles, White (Throughout Interior)
- 2'x4' (2'x2' Design) Ceiling Tiles, White (Throughout Interior)
- 2'x2' Small Pinhole Ceiling Tiles, White (Throughout Interior)
- Interior Brick Mortar, Gray (Throughout Interior)
- Cinderblock Mortar, Gray (Throughout Interior)
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings assoc. with Fiberglass Pipe Insulation, Gray (Throughout Interior)
- Wrap around Fiberglass Pipe Insulation, Brown (Throughout Interior)
- Sheetrock, White (Throughout Interior)
- Joint Compound assoc. with Sheetrock, White (Throughout Interior)

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA)

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM.

Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 528 Mineola Avenue, Carle Place, NY 11514 and 307 W. 38th St., NY NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-10)
- New York State Environmental Laboratory Approval Program (Lab No. 11469)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for ACM materials that may be impacted during the upcoming PA Replacement project at the White Plains High School include:

- Interior (Through Bldgs. A, B, C, D, E, F & G)

A. ASBESTOS-CONTAINING MATERIAL

Materials examined during the Berger inspection on 02/02/18 included:

- Glazed Brick Mortar, Gray
- Joint Compound, White
- Gypsum Board, White
- Plaster, Brown Coat

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected on 02/02/18 by Berger indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results of the bulk samples collected in **previous survey report** dated 03/29-30/17 by Louis Berger indicate that the following materials **contain asbestos** (greater than 1-percent);

- **Mudded Joints to FG Pipe Ins., Gray (Steam Tunnels to Bldg. B, C, D & E)[1]**
- **Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground, Gray (Steam Tunnels to Bldg. B, C, D & E)[1]**

Analytical results of the bulk samples collected in **previous survey report** dated 09/11/13 by Louis Berger indicate that the following materials **contain asbestos** (greater than 1-percent);

- **9"x9" Floor Tile (Auditorium)[1]**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)[1]**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)[1]**

As per 2016 AHERA, the following materials **contain asbestos** (greater than 1-percent);

- **9"x9" Floor Tile (Throughout)[1]**
- **Transit Soffit (Janitors Closet)[1]**

Note: 1. ACM will not be disturbed as part of the PA Replacement project.

Analytical results of the bulk samples collected on 02/02/18 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Glazed Brick Mortar, Gray
- Joint Compound, White
- Gypsum Board, White
- Plaster, Brown Coat

Analytical results of the bulk samples collected and/or visual examination on 10/13 & 27/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Screed, Gray (Roof C)
- Bottom Membrane, Black (Roof C)
- Felt Paper below Foam, Black (Roof C)
- Felt Paper on top of Foam, Black (Roof C)
- Perlite Insulation, Brown (Roof C)
- Top Membrane, Black (Roof C)
- Pitch Pocket Tar, Black (Roof C)
- Hatch Flashing, Black (Roof C)
- Screed, Gray (Roof A)
- Felt Paper below Foam, Black (Roof A)
- Felt Paper on top of Foam, Black (Roof A)
- Top Membrane, Black (Roof A)
- Screed, Gray (Roofs B, D, E & F)
- Felt Paper on Bottom of Foam, Black (Roofs B, D, E & F)
- Felt Paper on top of Foam, Black (Roofs B, D, E & F)
- Top Insulation Membrane, Black (Roofs B, D, E & F)
- Felt Paper on top of Roofing Membrane, Black (Roofs B, D, E & F)
- Cap Flashing Caulking, Gray (Roofs B, D, E & F)
- Perimeter Base Flashing, Black (Roofs B, D, E & F)
- Drain Flashing, Black (Roofs B, D, E & F)
- Tar on Mechanical Units, Black (Roofs B, D, E & F)
- Tar assoc. with Pitch Pockets at Ladder, Black (Roofs B, D, E & F)
- Mechanical Unit Flashing, Black (Roofs B, D, E & F)
- Hatch Flashing, Black (Roofs B, D, E & F)
- Canvas to FG to Drain Bowls, White (Throughout Interior)
- Cementitious Ceiling, White (Throughout Interior)
- Tectum Ceiling (Throughout Interior)

Analytical results of the bulk samples collected and/or visual examination on LB previous survey report dated 09/11/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Interior Brick Mortar, Grey
- Cinderblock Mortar, Grey
- 1’x1’ Pinhole Ceiling Tiles, White

- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings Insulation assoc. with Fiberglass Pipe Insulation, Grey
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound assoc. with Sheetrock, White
- Caulking at Metal Exhaust Vent Edge, Grey
- Roof Decking (Gym Mech. Room Roof)
- Paper to Foam Insulation (Gym & Gym Mech. Roofs)
- Fiberboard Insulation (Gym & Gym Mech. Roofs)
- Fabric Barrier (Gym & Gym Mech. Roofs)
- Tar on Concrete Deck (Gym Roof)

Analytical results of the bulk samples collected in **previous survey report** dated 03/29-30/17 by Louis Berger indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Mudded Joints to FG Pipe Ins., Gray (Steam Tunnels to Bldg. A & F)
- Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground), Gray (Steam Tunnels to Bldg. A & F)
- Vapor Barrier Material on FG Pipe Ins., Black (Steam Tunnels to Bldg. A, B, C, D, E & F)
- Cloth Fabric over FG Pipe Ins., Beige (Steam Tunnels to Bldg. A)
- Sealant to FG Pipe Ins. Seams, White (Steam Tunnels to Bldg. A, B, C, D, E & F & Mech Rooms)
- Paper (Pipe) Ins. Debris on Ground, White (Steam Tunnels to Bldg. F)
- Cementitious Material on Ground, Gray (Steam Tunnels to Bldg. F)
- Vibration Cloth, Black (Bldg. F Mech Room)
- Cloth Fabric to FG Duct Work Ins., Beige (Bldg. F Mech Room)
- Ceiling Plaster, Gray Only
- Gaskets, Green

Analytical results of the bulk samples collected in **previous survey report** dated 09/11/13 by Louis Berger indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Baseboard Glue, Brown
- Baseboard Molding, Brown
- Mastic assoc. with 9"x9" Floor Tiles, Black
- 2'x4' Ceiling Tiles, Gray
- Wall Ceramic Tile Grout, White
- Floor Ceramic Tile Grout, Brown
- Glazing at Entrance Aluminum Framing/Panels, White
- Interior Brick Mortar, Gray
- Cinderblock Mortar, Gray
- 1'x1' Pinhole Ceiling Tiles, White
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown

- Glazing at Celestory Glass Panels bet. Rooms & Hallways, Gray
- Fitting Insulation assoc. with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock Walls/Ceiling, White
- Joint Compound assoc. with Sheetrock Walls, White
- Caulking at Metal Exhaust Vent Edges, Gray
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

The following materials as per 2017 AHERA, **did not contain asbestos** based on previous reporting and/or sampling

- 1'x1' Pinhole Pattern Ceiling Tile, White (Throughout Interior)
- 2'x4' Pinhole Ceiling Tiles, White (Throughout Interior)
- 1'x1' Gouged Ceiling Tiles, White (Throughout Interior)
- 2'x4' Small Pinhole Ceiling Tiles, White (Throughout Interior)
- 1'x1' Fissure Ceiling Tiles, White (Throughout Interior)
- 2'x4' (2'x2' Design) Ceiling Tiles, White (Throughout Interior)
- 2'x2' Small Pinhole Ceiling Tiles, White (Throughout Interior)
- Interior Brick Mortar, Gray (Throughout Interior)
- Cinderblock Mortar, Gray (Throughout Interior)
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings assoc. with Fiberglass Pipe Insulation, Gray (Throughout Interior)
- Wrap around Fiberglass Pipe Insulation, Brown (Throughout Interior)
- Sheetrock, White (Throughout Interior)
- Joint Compound assoc. with Sheetrock, White (Throughout Interior)

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted during the upcoming PA Replacement project at the White Plains High School. The following suspect materials were sampled and analyzed for asbestos content by Berger:

4.1 Table 4.1 – Suspect Materials Inspected

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
Samples collected during Berger's latest inspection on 02/02/18			
01	Bldg. G	Glazed Brick Mortar, Gray	NAD
02	Bldg. E & G	Joint Compound, White	NAD
03	Bldg. E & G	Gypsum Board, White	NAD
04	Bldg. A	Plaster, Brown Coat	NAD

Bold = Positive for ACM NAD = No Asbestos Detected

4.2 CONDITION AND FRIABLITY ASSESSMENT TABLE

For each inspection conducted, the inspector classifies ACM materials by friability and condition. This helps to determine the extent of damage in certain areas as well as the potential for further damage and Asbestos release due to disturbance of the material.

Table 4.2 – Condition and Friability Assessment

Location	Material	Quantity	Friability	Condition
Asbestos Containing Materials will not be disturbed during the PA Replacement Project.				

Condition Definitions:
Good: None/Minimal apparent damage to ACM
Fair: Up to 10% localized damage or up to 25% of the entire ACM is damaged
Poor: Over 10% localized damage or over 25% of the entire ACM is damaged

4.3 SAMPLE ANALYSIS TABLE

Laboratory analysis results, in tabular form, are included in Appendix A.

5.0 AREAS NOT ACCESSIBLE

During the Inspection the following areas were not accessible:

Void Spaces within Walls, Ceilings & Floors: No destructive sampling was performed on concealed spaces in walls, ceilings or floors to access plenum, chases etc. It should be assumed that asbestos containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

Building Envelope: No destructive sampling was performed on the building envelope. It should be assumed that asbestos containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM materials have been identified at the White Plains High School but will not be impacted as part of the upcoming PA Replacement project at the White Plains High School. If at any point the current scope of work changes, ACM materials reported in Section 3.0 of this report, may require complete removal prior to the start of the PA Replacement project.

The ACM inspection was conducted at the request of White Plains Public School District for the upcoming PA Replacement project at the White Plains High School. Any change in the scope of work will require further investigation to accurately classify any additional ACM resulting from the modified or updated scope of work.

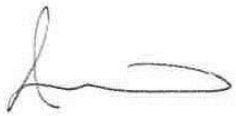
7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of LB's efforts for the environmental inspection work for the upcoming PA Replacement project at the White Plains High School.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of LB's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which LB is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon LB's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:



Marvin Luccioni
NYS DOL Inspector

Reviewed by:

Craig Napolitano, CHMM
Vice President, Industrial
Hygiene & Hazmat Services

APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PALINS, NY 10605

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
1	01	Bldg. G – Hall o/s Room G106	Glazed Brick Mortar, Gray	NAD	N/A
1	02	Stair G2	Glazed Brick Mortar, Gray	NAD	N/A
2	03	Bldg. G	Joint Compound, White	NAD	N/A
2	04	Bldg. E	Joint Compound, White	NAD	N/A
3	05	Bldg. G	Gypsum Board, White	NAD	N/A
3	06	Bldg. E	Gypsum Board, White	NAD	N/A
4	07	Bldg. A Hallway o/s Room A115	Plaster, Brown Coat	NAD	N/A
4	08	Bldg. A Hallway o/s Room A115	Plaster, Brown Coat	NAD	N/A
4	09	Bldg. A Hallway o/s Room A115	Plaster, Brown Coat	NAD	N/A

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

APPENDIX B:
ASBESTOS BULK SAMPLE FIELD DATA SHEETS WITH CHAIN OF CUSTODY AND LABORATORY RESULTS

EMSL Analytical, Inc.
528 Mineola Avenue, Carle Place, NY 11514
Phone/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com carleplacelab@emsl.com

EMSL Order:	061802054
CustomerID:	LBAP78
CustomerPO:	2042261.03
ProjectID:	

Attn: **Marvin Luccioni**
Louis Berger U.S., Inc
96 Morton Street
8th floor
New York, NY 10014

Phone:	(212) 612-7900
Fax:	
Received:	02/02/18 4:51 PM
Analysis Date:	2/4/2018
Collected:	2/1/2018

Project: **W.P.S.D., WPHS, 550 North St., W.P., NY 10605**

Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non Asbestos Fibrous	Non Asbestos Non-Fibrous	Asbestos
Sample ID 1-01 *061802054-0001*		**Description** Bldg. G - Hall O/S Rm. G106 / Stair 92 - Glazed Brick Mortar, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/4/2018	Gray/Tan		65.00% Quartz 20.00% Ca Carbonate 15.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 1-02 *061802054-0002*		**Description** Bldg. G - Hall O/S Rm. G106 / Stair 92 - Glazed Brick Mortar, Gray **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/4/2018	Gray/Tan		60.00% Quartz 25.00% Ca Carbonate 15.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 2-03 *061802054-0003*		**Description** Bldg. G - Joint Compound, White **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	2/4/2018	Tan/White		4.00% Mica 81.00% Ca Carbonate 15.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 2-04 *061802054-0004*		**Description** Bldg. E - Joint Compound, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/5/2018	White		5.00% Mica 80.00% Ca Carbonate 15.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From 02/05/2018 10:52:46

EMSL Analytical, Inc.
528 Mineola Avenue, Carle Place, NY 11514
Phone/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com carleplacelab@emsl.com

EMSL Order:	061802054
CustomerID:	LBAP78
CustomerPO:	2042261.03
ProjectID:	

Test Report:Asbestos Analysis of Bulk Material

Test		Color	Non Asbestos Fibrous	Non Asbestos Non-Fibrous	Asbestos
Sample ID 3-05 *061802054-0005*		**Description** Bldg. G - Gypsum Board, White **Homogeneity** Heterogeneous			
PLM NYS 198.1 Friable	2/4/2018	Brown/White	<1% Glass 5.00% Cellulose	80.00% Gypsum 10.00% Ca Carbonate 5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 3-06 *061802054-0006*		**Description** Bldg. E - Gypsum Board, White **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/5/2018	Gray	5.00% Cellulose	75.00% Gypsum 20.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 4-07 *061802054-0007*		**Description** Bldg. A - Hallway O/S Rm. A115 - Plaster, Brown Coat Only **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/4/2018	Gray/Tan		62.00% Quartz 3.00% Mica 18.00% Gypsum 10.00% Ca Carbonate 7.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 4-08 *061802054-0008*		**Description** Bldg. A - Hallway O/S Rm. A115 - Plaster, Brown Coat Only **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/4/2018	Gray		68.00% Quartz 2.00% Mica 17.00% Gypsum 8.00% Ca Carbonate 5.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**
Sample ID 4-09 *061802054-0009*		**Description** Bldg. A - Hallway O/S Rm. A115 - Plaster, Brown Coat Only **Homogeneity** Homogeneous			
PLM NYS 198.1 Friable	2/5/2018	Gray		80.00% Quartz 20.00% Non-fibrous (other)	**None Detected**
PLM NYS 198.6 VCM					**Not Analyzed**
PLM NYS 198.6 NOB					**Not Analyzed**
TEM NYS 198.4 NOB					**Not Analyzed**

Initial Report From 02/05/2018 10:52:46

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http://www.EMSL.com carleplacelab@emsl.com

EMSL Order:	061802054
CustomerID:	LBAP78
CustomerPO:	2042261.03
ProjectID:	

Test Report:Asbestos Analysis of Bulk Material

Test	Color	Non Asbestos Fibrous	Non Asbestos Non-Fibrous	Asbestos

Analyst(s)
Daniel Clarke
Steve Jusczuk

Michelle McGowan, Laboratory Manager
or other approved signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non-asbestos containing.
All samples examined for the presence of vermiculite when analyzed via NYS 198.1.
-NYS Guidelines for Vermiculite containing samples are available at http://www.wadsworth.org/labcert/elapcert/forms/VermiculiteInterimGuidance_Rev070913.pdf
EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NYS ELAP 11469

Initial Report From 02/05/2018 10:52:46

061802054

LOUIS BERGER — ASBESTOS SURVEY DATA SHEET/ CHAIN OF CUSTODY

PAGE 1 OF 1

LB PROJ #: 20422G1.030 Service ID #: —
CLIENT: W.P.S.D. LLW#: —
Project Site: WPHS 550 NORTH ST., W.P., NY 10605
Project Manager:

LOCATION(S) SURVEYED: INTERIOR
PROPOSED PROJECT: INTERCOM / PA UPGRADE
DATE(S) OF INSPECTION: 02/01/18
Inspector(s) ~~02/01/18~~ M. LUCCHONI

LOUIS BERGER
TELEPHONE NO.: (212) 612-7900
ADDRESS: 96 Morton Street, 8 Floor, New York, NY 10014

RESULTS TO: MLUCCHONI@LOUISBERGER.COM

TURNAROUND TIME: 48HRS
☐ 1 HR. ☐ 6 HR. ☐24 HR. ☐72 HR.

HA	SAMPLE NO.	MATERIAL DESCRIPTION	SAMPLE LOCATION	APPROX. QUANTITY (LF/SF)	FIELD NOTES
1	01	GLAZED BRICK MORTAR, GRAY	BLDG. G - HALL O/S RM. G106		
↓	02	↓	STAIR G2		
2	03	JOINT COMPOUND, WHITE	BLDG. G		
↓	04	↓	BLDG. E		
3	05	GYPSUM BOARD, WHITE	BLDG. G		
↓	06	↓	BLDG. E		
4	07	PLASTER, BROWN COAT ONLY	BLDG A. HALLWAY O/S RM A115		
↓	08	↓	↓		
↓	09	↓	↓		

RECEIVED
EMPLACEMENT DEPT.
CARLE PLACE, NY
18 FEB -2 PM 4:5

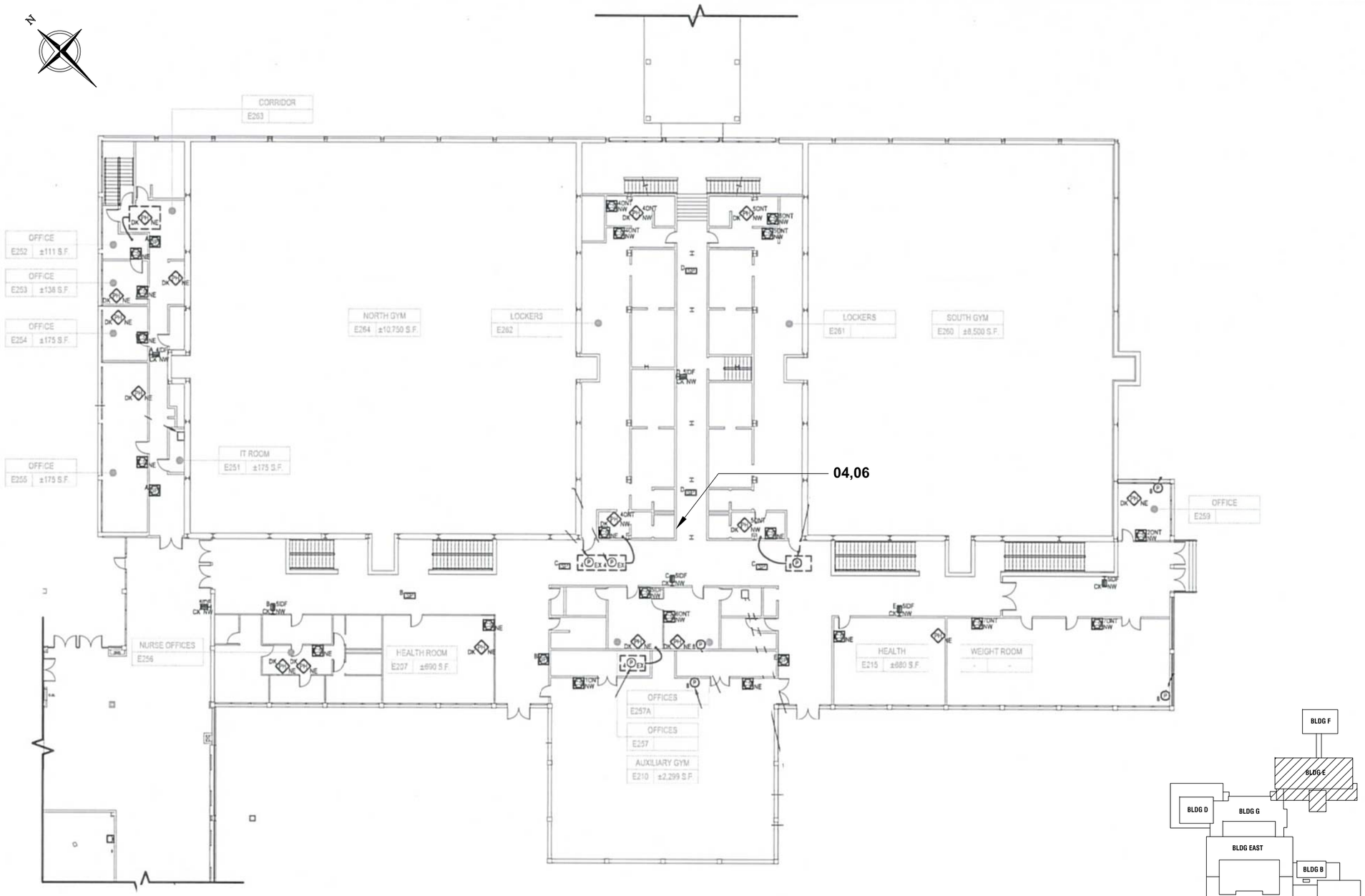
CHAIN OF CUSTODY

Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)			Relinquished by: (print)	(Sign)		
M. LUCCHONI		01/02/18	4:30 AM/PM			/ /	AM/PM			/ /	AM/PM
Received by: (print)	(Sign)			Received by: (print)	(Sign)			Received by: (print)	(Sign)		
Joshua Gopin		2/2/18	4:56 AM/PM			/ /	AM/PM			/ /	AM/PM

GENERAL NOTES: All inconclusive NOBs to be analyzed by TEM. Please stop at 1st positive in any homogeneous group.

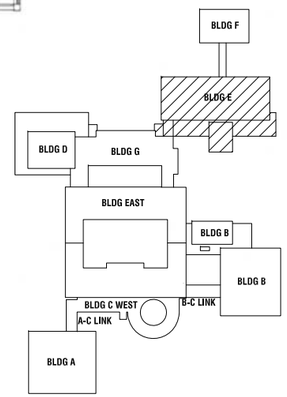
2/4/18 11:33A
2/5/18

APPENDIX C:
ASBESTOS BULK SAMPLE LOCATION DRAWINGS



1 BSL001 GROUND FLOOR PLAN - BUILDING "E"

SCALE: NOT TO SCALE



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

N

Louis Berger

96 Morton Street, 8th Floor, New York, New York 10014
TEL. 212.612.7900 FAX 212.363.4341 WWW.louisberger.com

White Plains Public Schools
REAL LIFE LEARNING

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS CITY SCHOOL DISTRICT

PA REPLACEMENT AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

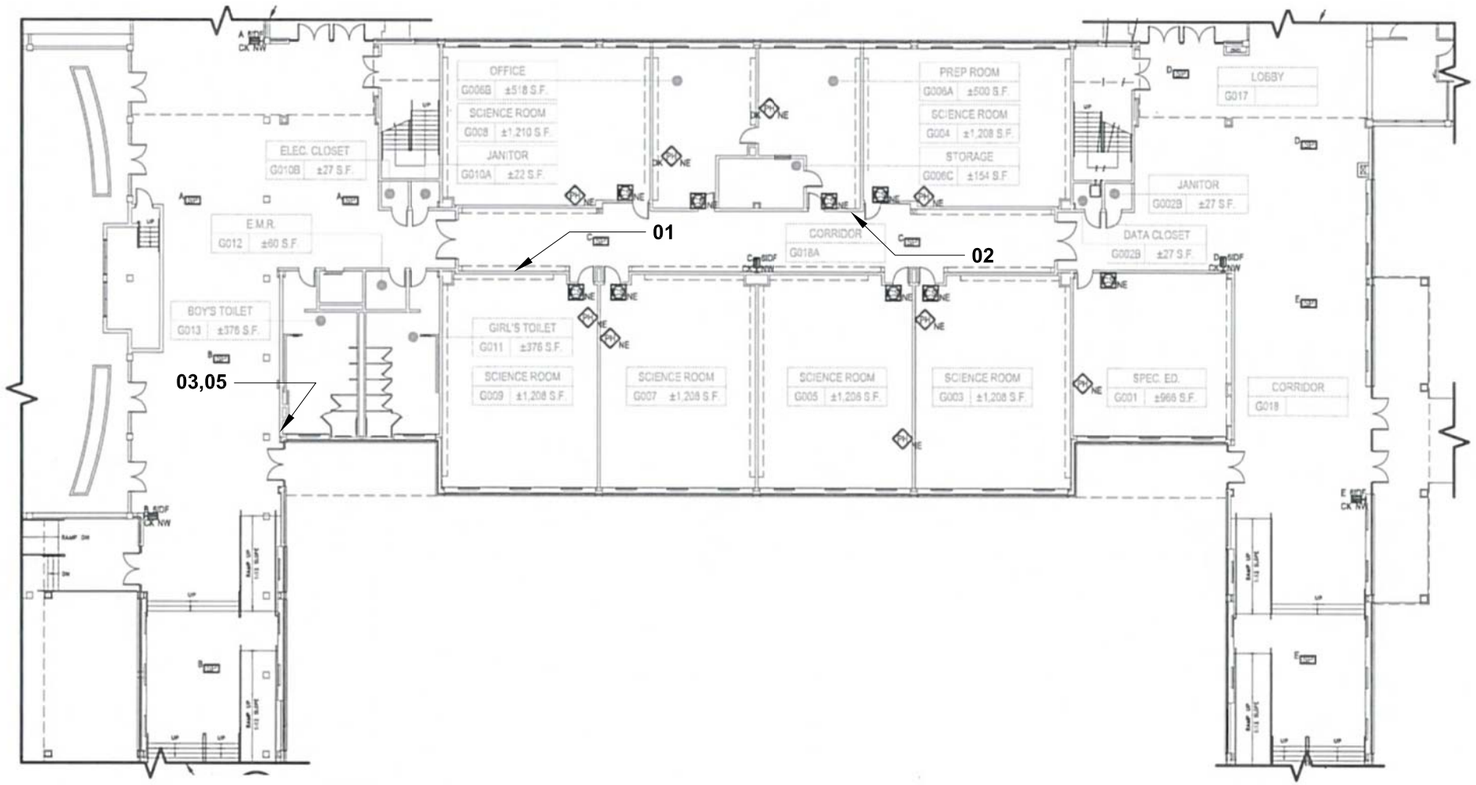
DRAWING TITLE:

BULK SAMPLE LOCATIONS GROUND FLOOR PLAN - BUILDING "E"

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 02/07/2018
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL001**

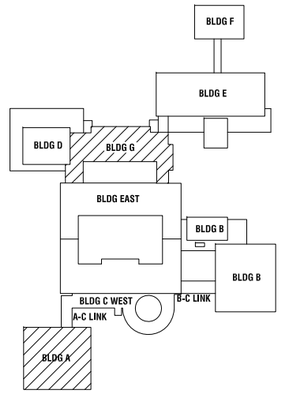
DRAWING NUMBER: 1 OF 3

CONSULTANTS PROJECT #: 2042261.030



1 BSL002 GROUND FLOOR PLAN - BUILDING "G"

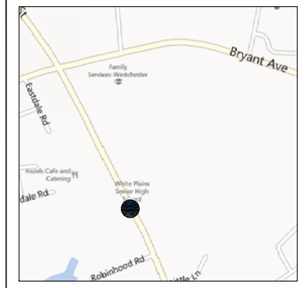
SCALE: NOT TO SCALE



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN



Louis Berger
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TEL. 212.612.7900 FAX 212.363.4341 WWW.louisberger.com

White Plains Public Schools WP REAL LIFE LEARNING

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS CITY SCHOOL DISTRICT

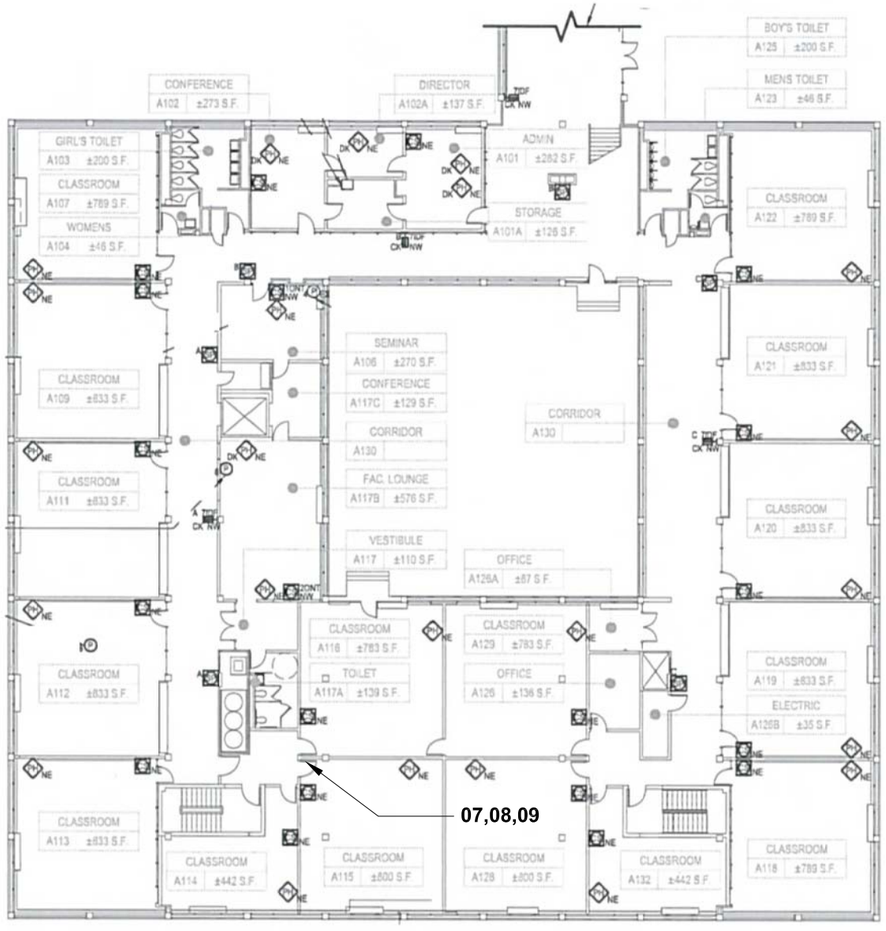
PA REPLACEMENT AT
WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

BULK SAMPLE LOCATIONS
GROUND FLOOR PLAN - BUILDING "G"

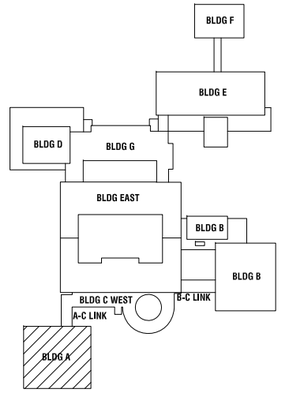
DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 02/07/2018
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL002**
	DRAWING NUMBER: 2 OF 3

CONSULTANTS PROJECT #: 2042261.030



1 BSL003 FIRST FLOOR PLAN - BUILDING "A"

SCALE: NOT TO SCALE



KEY PLAN

SCALE: NOT TO SCALE

LOCATION PLAN

N

Louis Berger

96 Morton Street, 8th Floor, New York, New York 10014
TEL. 212.612.7900 FAX 212.363.4341 WWW.louisberger.com

White Plains Public Schools WP REAL LIFE LEARNING

REVISIONS:

NUMBER	DESCRIPTION	DATE
1		
2		
3		
4		

WHITE PLAINS CITY SCHOOL DISTRICT

PA REPLACEMENT AT WHITE PLAINS HIGH SCHOOL
580 NORTH STREET
WHITE PLAINS, NY 10605

DRAWING TITLE:

BULK SAMPLE LOCATIONS FIRST FLOOR PLAN - BUILDING "A"

DRAWN BY: J. PEREZ	SCALE: NOT TO SCALE
INSP/INV.: M. LUCCIONI	DATE: 02/07/2018
CERTIFICATE NO: 03-11021	DRAWING NUMBER:
CHECKED BY C. NAPOLITANO	**BSL003**
	DRAWING NUMBER: 3 OF 3

CONSULTANTS PROJECT #: 2042261.030

APPENDIX D:
ASBESTOS CONTAINING MATERIALS LOCATION DRAWINGS

APPENDIX E:
COMPANY LICENSE, PERSONNEL CERTIFICATIONS AND LABORATORY ACCREDITATIONS

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

The Louis Berger Group, Inc.
16th Floor
48 Wall Street

New York, NY 10005

FILE NUMBER: 03-0940
LICENSE NUMBER: 29635
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 01/18/2017
EXPIRATION DATE: 01/31/2018

Duly Authorized Representative – Craig Napolitano:

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)


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE
N.Y.S
MARVIN LUCCIONI
CLASS(EXPIRES)
C ATEC(02/18) D INSP(02/18)
H PM (02/18) I PD (02/18)
CERT# 03-11021
DMV# 992503906
MUST BE CARRIED ON ASBESTOS PROJECTS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2018
Issued April 01, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. MICHELLE MCGOWAN
EMSL ANALYTICAL, INC.
528 MINEOLA AVE.
CARLE PLACE, NY 11514

NY Lab Id No: 11469

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
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

Sample Preparation Methods

	EPA 3051A

Serial No.: 56030

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101048-10

EMSL Analytical, Inc.

Carle Place, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2017-07-01 through 2018-06-30

Effective Dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
528 Mineola Ave.
Carle Place, NY 11514
Ms. Michelle McGowan
Phone: 516-997-7251 Fax: 516-997-7528
Email: mmcgowan@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 101048-10

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- Appendix E to Subpart E of Part 763 -- Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

Effective 2017-07-01 through 2018-06-30

APPENDIX F:
PHOTOGRAPHIC DOCUMENTATION

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605
PHOTODOCUMENTATION LOG

Photo # 01: 1'x1' Pinhole Pattern Ceiling Tile, White

Photo # 02: 2'x4' Fissured Ceiling Tile, White

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605
PHOTODOCUMENTATION LOG

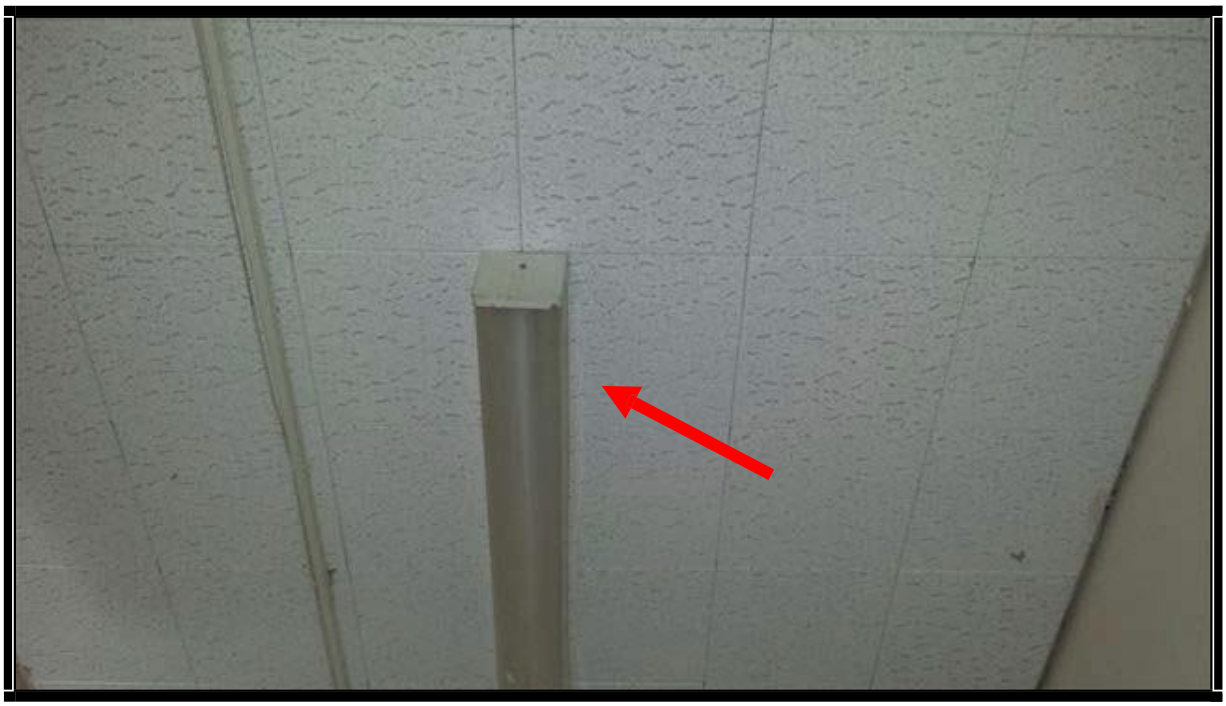


Photo # 03: 1'x1' Gouged Ceiling Tile, White

Photo # 04: 2'x4' Small Pinhole Ceiling Tile, White

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605
PHOTODOCUMENTATION LOG

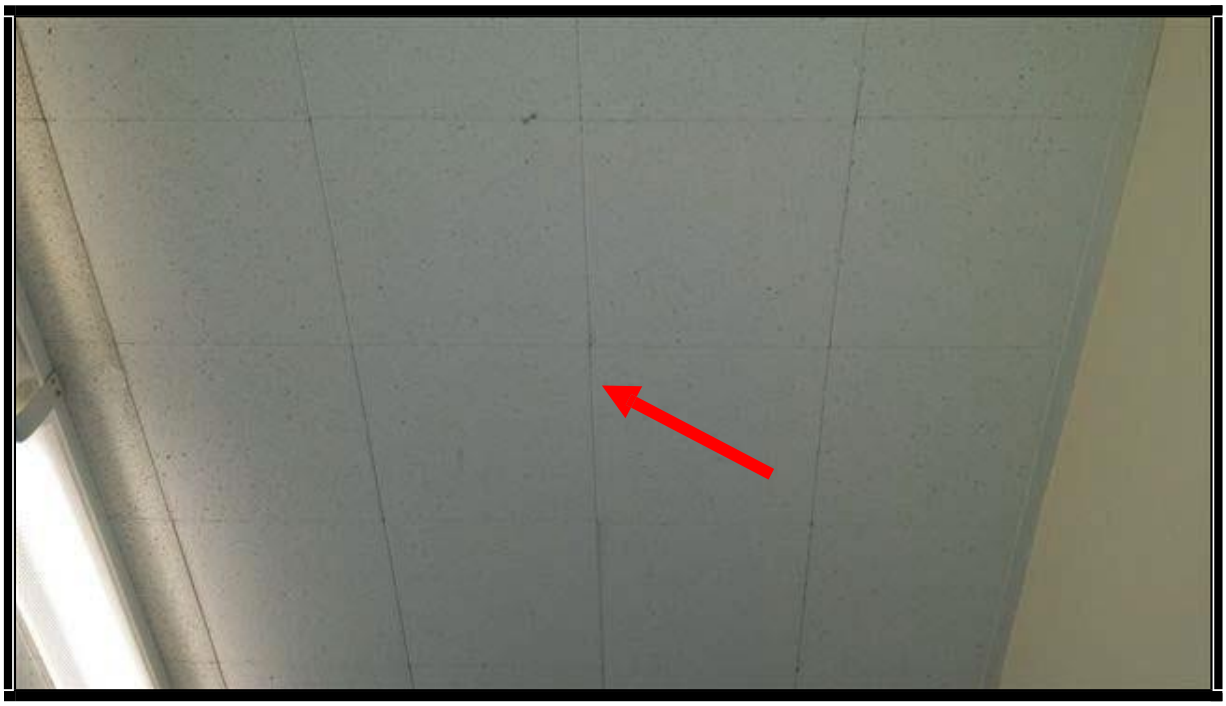


Photo # 05: 1’x1’ Fissured Ceiling Tile, White

ASBESTOS INSPECTION SERVICES FOR
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605
PHOTODOCUMENTATION LOG

Photo # 06: 2'x4' (2'x2' Design) Ceiling Tile, White

Photo # 07: 2'x2' Small Pinhole Ceiling Tile, White

APPENDIX G:
FILE SEARCH

SUMMARY OF SPACE

Louis Berger
565 Taxter Road, Suite 510
Elmsford, New York 10523

2016
AHERA 3 YEAR RE-INSPECTION REPORT
MANAGEMENT PLAN UPDATE

WHITE PLAINS PUBLIC SCHOOL
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET, WHITE PLAINS, NY 10605

Space ID	Description / Common Name	HA	HA Description	Quantity	Assesment	Response Action			Comment
						Remove	Repair	O&M	
A1027	M. Locker A002	1	9”x9” Floor Tile/Mastic	232 SF	X	-	-	232 SF	
A1029	W. Locker A001	1	9”x9” Floor Tile/Mastic	232 SF	X	-	0.5 SF	231.5 SF	1 Cracked Tile
A2005	Classroom A122	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A2007	Classroom A121	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A2008	Classroom A120	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A2009	Classroom A119	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A2010	Classroom A118	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A2023	Classroom A113	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A2025	Classroom A112	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A2028	Classroom A111	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A2031	Classroom A109	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A2032	Classroom A107	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A3005	Classroom A222	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A3006	Classroom A221	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A3008	Classroom A220	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A3009	Classroom A219	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A3010	Classroom A218	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A3023	Classroom A213	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
A3024	Classroom A212	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A3030	Classroom A209	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A3032	Classroom A208	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
A3033	Classroom A207	1	9”x9” Floor Tile/Mastic	789 SF	X	-	-	789 SF	
B1028	Classroom B119	1	9”x9” Floor Tile/Mastic	808 SF	X	-	-	808 SF	
B1028A	Classroom B119 Closet	1	9”x9” Floor Tile/Mastic	45 SF	X	-	-	45 SF	
B1029	Classroom B120	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B1030	Classroom B121	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B1031	Classroom B122	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B1033	Classroom B123	1	9”x9” Floor Tile/Mastic	808 SF	X	-	-	808 SF	

Louis Berger
565 Taxter Road, Suite 510
Elmsford, New York 10523

2016
AHERA 3 YEAR RE-INSPECTION REPORT
MANAGEMENT PLAN UPDATE

WHITE PLAINS PUBLIC SCHOOL
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET, WHITE PLAINS, NY 10605

Space ID	Description / Common Name	HA	HA Description	Quantity	Assesment	Response Action			Comment
						Remove	Repair	O&M	
B2010	Classroom B207	1	9”x9” Floor Tile/Mastic	808 SF	X	-	2 SF	806 SF	
B2018	Classroom B211	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B2033	Classroom B219	1	9”x9” Floor Tile/Mastic	808 SF	X	-	2 SF	806 SF	
B2034	Classroom B220	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B2036	Classroom B221	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B2037	Classroom B222	1	9”x9” Floor Tile/Mastic	836 SF	X	-	-	836 SF	
B2038	Classroom B223	1	9”x9” Floor Tile/Mastic	808 SF	X	-	-	808 SF	
C1003	Main Elec. C031	1	9”x9” Floor Tile/Mastic	273 SF	X	-	4 SF	269 SF	
C1005	Janitor's Office C030	1	9”x9” Floor Tile/Mastic	237 SF	X	-	-	237 SF	
		2	Transite Soffit	40 SF	X	-	-	40 SF	
C1008	Teacher's Photo Copy	1	9”x9” Floor Tile/Mastic	793SF	X	-	55 SF	738SF	
C1024	Janitor's Closet A003A	1	9”x9” Floor Tile/Mastic	32 SF	X	-	5 SF	27 SF	Missing Tiles
C1031	Comp. Graph C006	1	9”x9” Floor Tile/Mastic	420 SF	X	-	5 SF	415 SF	
C1032	Video C009	1	9”x9” Floor Tile/Mastic	825 SF	X	-	-	825 SF	
C1039	Classroom C015	1	9”x9” Floor Tile/Mastic	575 SF	X	-	-	575 SF	
C1046	Elec. C015B	1	9”x9” Floor Tile/Mastic	34 SF	X	-	-	34 SF	
C2084	Elec. C115	1	9”x9” Floor Tile/Mastic	30 SF	X	-	2 SF	28 SF	
C2087	Classroom C110	1	9”x9” Floor Tile/Mastic	833 SF	X	-	-	833 SF	
C2088	Classroom C111	1	9”x9” Floor Tile/Mastic	840 SF	X	-	-	840 SF	
C2089	Classroom C109	1	9”x9” Floor Tile/Mastic	825 SF	X	-	-	825 SF	
C2090	Classroom C108	1	9”x9” Floor Tile/Mastic	828 SF	X	-	-	828 SF	
C2092	Classroom C107	1	9”x9” Floor Tile/Mastic	828 SF	X	-	-	828 SF	
C2093	Classroom C105	1	9”x9” Floor Tile/Mastic	828 SF	X	-	-	828 SF	
C2095	Classroom C104	1	9”x9” Floor Tile/Mastic	828 SF	X	-	-	828 SF	
C2105	Janitor's Closet C148A	1	9”x9” Floor Tile/Mastic	35 SF	X	-	2 SF	33 SF	
D2011	Pract. D112	1	9”x9” Floor Tile/Mastic	105 SF	X	-	-	105 SF	
D2012	Pract. D111	1	9”x9” Floor Tile/Mastic	105 SF	X	-	-	105 SF	

SUMMARY OF SPACE

Louis Berger
565 Taxter Road, Suite 510
Elmsford, New York 10523

2016
AHERA 3 YEAR RE-INSPECTION REPORT
MANAGEMENT PLAN UPDATE

WHITE PLAINS PUBLIC SCHOOL
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET, WHITE PLAINS, NY 10605

Space ID	Description / Common Name	HA	HA Description	Quantity	Assesment	Response Action			Comment
						Remove	Repair	O&M	
D2016	Storage D108B	1	9”x9” Floor Tile/Mastic	263 SF	X	-	5 SF	258 SF	
D2017	Chorus D108	1	9”x9” Floor Tile/Mastic	1,204 SF	X	-	-	1,204 SF	
D2018	Office D108A	1	9”x9” Floor Tile/Mastic	139 SF	X	-	-	139 SF	
E2012	Office	1	9”x9” Floor Tile/Mastic	110 SF	X	-	-	110 SF	
E2014	Office	1	9”x9” Floor Tile/Mastic	95 SF	X	-	-	95 SF	
E2017	Pool Connection Corridor	1	9”x9” Floor Tile/Mastic	1,600 SF	X	-	-	1,600 SF	
E2018	Office	1	9”x9” Floor Tile/Mastic	95 SF	X	-	-	95 SF	
E2022	Office	1	9”x9” Floor Tile/Mastic	110 SF	X	-	-	110 SF	
E3004	Janitor's Closet	1	9”x9” Floor Tile/Mastic	20 SF	X	-	-	20 SF	
E3013	Health E215	1	9”x9” Floor Tile/Mastic	680 SF	X	-	-	680 SF	
E3014	Classroom E216	1	9”x9” Floor Tile/Mastic	680 SF	X	-	-	680 SF	
E3015	Classroom E217	1	9”x9” Floor Tile/Mastic	675 SF	X	-	-	675 SF	
E3017	Office	1	9”x9” Floor Tile/Mastic	100 SF	X	-	-	100 SF	
E3019	Office	1	9”x9” Floor Tile/Mastic	60 SF	X	-	-	60 SF	
E3020	Office	1	9”x9” Floor Tile/Mastic	100 SF	X	-	-	100 SF	
E3022	Office	1	9”x9” Floor Tile/Mastic	100 SF	X	-	-	100 SF	
F2001	Pool	16	Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)	120 LF	X	-	-	120 LF	
H1018	South Stairs	1	9”x9” Floor Tile/Mastic	100 SF	X	-	-	100 SF	

ASSESSMENT CATEGORIES

1. = Damaged or Significantly Damaged TSI ACBM
2. = Damaged Friable Surfacing ACBM
3. = Significantly Damaged Friable Surfacing ACBM
4. = Damaged or Significantly Damaged Friable Miscellaneous ACBM
5. = ACBM with Potential for Damage
6. = ACBM with Potential for Significant Damage
7. = Any Remaining Friable ACBM or Friable Suspect ACBM
X. = Not Applicable (Material is Nonfriable Surfacing or Miscellaneous Material)

FINAL REPORT OF ENVIRONMENTAL SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Prepared by:

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Project No. 3000825
Submission Date: September 11, 2013

The Louis Berger Group Inc.
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September 11, 2013

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: Final Report of Environmental Services
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger Group (LBG) has completed a material Inspection at White Plains High School located at 550 North Street, White Plains, NY 10605. The Inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) associated with proposed renovations.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

THE LOUIS BERGER GROUP (LBG)

Craig Napolitano, CHMM
Director, Industrial Hygiene & Hazmat Services

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Appendices

1.0 EXECUTIVE SUMMARY

Louis Berger Group, Inc (LBG) has performed a renovation specific material Inspection for the presence or absence of Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) at White Plains High School located at 550 North Street, White Plains, NY 10605. The intent of this Inspection was to screen for Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) that may be impacted during the proposed renovations.

Michael Gelfand and Dmitri Kirnossenko of LBG performed this Inspection on July 24, 2013, and Andrew Cheskin performed an additional inspection on September 4, 2013. Mr. Kirnossenko has New York State Department of Labor (NYSDOL) Asbestos Inspector License (Cert# 07-01720). Mr. Gelfand has NYSDOL Asbestos Inspector License (Cert# 98-17113). Mr. Cheskin has NYSDOL Asbestos Inspector License (Cert# 05-04280). The results of the visual inspection and bulk sample analysis determined that the following suspect ACM and PCB materials may be impacted by the renovation project:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected by Berger indicate that the following materials **contain asbestos** (greater than 1-percent).

- **9”x9” Beige Floor Tiles (Auditorium)**
- **Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)**
- **Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)**
- **Exterior Metal Wall Panel Frame Caulking (Pool Building)**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

Analytical results of the bulk samples collected indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)

- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

The following materials were **assumed to contain asbestos**:

- **9"x9" Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C**
- **9"x9" Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor**
- **Ceiling Scratch Coat, Pool Building**
- **Ceiling Tectum Tiles, North and South Gym**
- **Built-up Roofing on Gym Roof**
- **Mechanical Equipment Flashing on Gym Roof**

B. PCB-CONTAINING MATERIAL

Analytical results of the bulk samples collected indicate that the following materials **contain PCB** (greater than 50 PPM).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain PCB** (less than 50 PPM);

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each

of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 307 West 38th Street, New York, NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-9)
- New York State Environmental Laboratory Approval Program (Lab No. 11506)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual

chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761), the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605), New York State Department of Environmental Conservation 6NYCRR 370-376 and federal Occupational Safety and Health Administration (OSHA) 29CFR 1926 & 1910. These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for suspect ACM and PCB materials that may be impacted by the proposed renovations. Locations surveyed include:

- Building Exterior
- Hallways
- Rooms
- Auditorium
- Gymnasiums
- Pool
- Gym Roof, Gym Mechanical Room Roof

A. ASBESTOS-CONTAINING MATERIAL

Materials examined during the Berger Inspection included:

- 9”x9” Beige Floor Tiles (Auditorium)
- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg. A Gas Room Exit)
- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- 9”x9” Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C

- 9”x9” Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor
- Ceiling Scratch Coat, Pool Building
- Ceiling Tectum Tiles, North and South Gym
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

Based upon visual inspection and bulk sample analysis asbestos has been confirmed to exist in the following materials:

- **9”x9” Beige Floor Tiles (Auditorium)**
- **Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)**
- **Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)**
- **Exterior Metal Wall Panel Frame Caulking (Pool Building)**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

Asbestos was **not detected** in the following materials via PLM and/or TEM analysis:

- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- Roof Decking, Gym Mechanical Room Roof
- Paper to Foam Insulation, Gym Mechanical Room Roof and Gym Roof
- Fiberboard Insulation, Gym Mechanical Room Roof and Gym Roof

- Fabric Barrier, Gym Mechanical Room Roof and Gym Roof
- Tar on Concrete Deck, Gym Roof

The following materials were **assumed to contain asbestos**:

- **9"x9" Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C**
- **9"x9" Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor**
- **Ceiling Scratch Coat, Pool Building**
- **Ceiling Tectum Tiles, North and South Gym**

B. PCB-CONTAINING MATERIAL

Materials examined during the Inspection included:

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

Based upon visual inspection and bulk sample, PCBs have been confirmed to exist in the following materials:

- **None**

PCB was **not detected** in the following testing combinations within the building via bulk sample analysis:

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were sampled and analyzed for asbestos content by Berger:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
A	Auditorium	Baseboard Glue (brown)	NAD
B	Auditorium	Baseboard Molding (brown)	NAD
C	Auditorium	Mastic assoc. with 9”x9” Floor Tiles (black)	NAD
D	**Auditorium**	**9”x9” Beige Floor Tiles**	**ACM**
E	Pool Connection Corridor	2’x4’ Ceiling Tiles (grey)	NAD
F	Pool Connection Corridor	Baseboard Glue (brown)	NAD
G	Pool Connection Corridor	Baseboard (brown)	NAD
H	Pool Bldg.	Wall Ceramic Tile Grout (white)	NAD
I	Pool Bldg.	Floor Ceramic Tile Grout (brown)	NAD
J	Pool Bldg.	Glazing at Entrance Aluminum Framing/Panels (white)	NAD
K	Pool Bldg.	Interior Brick Mortar (grey)	NAD
L	Pool Bldg.	**Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**ACM**
M	**Pool Bldg.**	**Exterior metal Wall Panel Glazing (type 1) (grey)**	**Contaminated ACM**
N	**Pool Bldg.**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**ACM**
O	**Pool Bldg.**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**ACM**
P	Auditorium	Cinderblock Mortar (grey)	NAD
Q	1st Floor Rooms	1’x1’ Pinhole Ceiling Tiles (white)	NAD
R	1st Floor Rooms	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
S	2nd Floor Rooms	1’x1’ Pinhole Ceiling Tiles (white)	NAD
T	2nd Floor Rooms	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
U	1st Floor Hallways	1’x1’ Pinhole Ceiling Tiles (white)	NAD
V	1st Floor Hallways	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
W	2nd Floor Hallways	1’x1’ Pinhole Ceiling Tiles (white)	NAD
X	2nd Floor Hallways	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
Y	Bldgs. A, B, C 1st Floor	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD
Z	Bldgs. A, B, C 2nd Floor	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD
A1	Bldgs. A, B, C	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD
B1	Bldgs. A, B, C	Wrap around Fiberglass Pipe Insulation (brown)	NAD
C1	Bldgs. A, B, C	Cinderblock Mortar (grey)	NAD
D1	Bldgs. A, B, C	Sheetrock Walls (white)	NAD
E1	Bldgs. A, B, C	Joint Compound assoc. with Sheetrock Walls (white)	NAD
F1	Gym Bldg.	Cinderblock Wall Mortar (grey)	NAD
G1	Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD
H1	**Gym Roof**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**ACM**
I1	**Bldg. A Gas Room Exit (NW corner of Bldg.)**	**Exterior Door Frame Caulking (grey)**	**ACM**
1	Gym Mechanical Room Roof	Roof Decking	NAD
2	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD
3	Gym Mechanical Room Roof	Fiberboard Insulation	NAD
4	Gym Mechanical Room Roof	Fabric Barrier	NAD
5	Gym Roof	Tar on Concrete Deck	NAD
6	Gym Roof	Paper to Foam Insulation	NAD
7	Gym Roof	Fabric Barrier	NAD

Bold = Positive for ACM NAD = No Asbestos Detected

B. PCB-CONTAINING MATERIAL

The PCB Inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were tested for PCB content:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
B	Pool Building	Interior Vertical Expansion Joint Caulking at Brick Curtain Walls	ND
C	Pool Building	Exterior metal Wall Panel Glazing (type 1)	ND
D	Pool Building	Exterior metal Wall Panel Glazing (type 2)	ND

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
E	Pool Building	Exterior Metal Wall Panel Frame Caulking	ND
F	Bldgs. A, B, C	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	
G	Gym Roof	Caulking at Metal Exhaust Vent Edges	ND
H	Gym Roof	Caulking at Flashing on Gym Mechanical Roof	ND
I	Bldg. A Gas Room Exit (NW corner of Bldg.)	Exterior Door Frame Caulking	ND

Bold = Positive for PCB ND = No PCB Detected

4.2 SAMPLE ANALYSIS TABLE

ACM laboratory analysis results are included in Appendix A.

5.0 AREAS NOT ACCESSIBLE

During the Inspection the following areas were not accessible:

- Void Spaces within Walls: No destructive sampling was performed on concealed spaces in walls to access plenum, chases etc. It should be assumed that asbestos, lead and PCB containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

- Pool Ceiling

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM materials have been identified in this inspection that may be impacted as part of the renovations at the White Plains High School. These materials, reported in Section 3.0 of this report, may require complete removal prior to the start of the renovation project. No PCBs were identified during this Inspection.

The ACM & PCB Inspection was conducted at the request of White Plains City School District for the proposed renovations, as provided by email from H2M Senior Project Architect. Any change in the scope of work will require further investigation to accurately classify any additional ACM or PCBs resulting from the modified or updated scope of work.

7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of LBG's efforts for the environmental inspection work for the White Plains High School.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of LBG's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which LBG is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon LBG's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:

Michael Gelfand
NYS DOL Inspector

Reviewed by:

Craig Napolitano, CHMM
Director, Industrial
Hygiene & Hazmat Services

APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
A	1	Auditorium, by Entrance	Baseboard Glue (brown)	NAD	NAD
A	2	Auditorium, by Stage	Baseboard Glue (brown)	NAD	NAD
B	3	Auditorium, by Entrance	Baseboard Molding (brown)	NAD	NAD
B	4	Auditorium, by Stage	Baseboard Molding (brown)	NAD	NAD
C	5	Auditorium, by Entrance	Mastic assoc. with 9”x9” Floor Tiles (black)	NAD	NAD
C	6	Auditorium, middle	Mastic assoc. with 9”x9” Floor Tiles (black)	<1% Chrysotile	<1% Chrysotile
D	**7**	**Auditorium, by Entrance**	**9”x9” Beige Floor Tiles**	**2.4% Chrysotile**	**NA/PS**
D	**8**	**Auditorium, middle**	**9”x9” Beige Floor Tiles**	**NA/PS**	**NA/PS**
E	9	Pool Connection Corridor, south	2’x4’ Ceiling Tiles (grey)	NAD	NAD
E	10	Pool Connection Corridor, north	2’x4’ Ceiling Tiles (grey)	NAD	NAD
F	11	Pool Connection Corridor, south	Baseboard Glue (brown)	NAD	NAD
F	12	Pool Connection Corridor, north	Baseboard Glue (brown)	NAD	NAD
G	13	Pool Connection Corridor, south	Baseboard (brown)	NAD	NAD
G	14	Pool Connection Corridor, north	Baseboard (brown)	NAD	NAD
H	15	Pool Bldg., south	Wall Ceramic Tile Grout (white)	NAD	N/A
H	16	Pool Bldg., north	Wall Ceramic Tile Grout (white)	NAD	N/A
I	17	Pool Bldg., south	Floor Ceramic Tile Grout (brown)	NAD	N/A

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
I	18	Pool Bldg., north	Floor Ceramic Tile Grout (brown)	NAD	N/A
J	19	Pool Bldg., Entrance Wall	Glazing at Entrance Aluminum Framing/Panels (white)	NAD	NAD
J	20	Pool Bldg., Entrance Wall	Glazing at Entrance Aluminum Framing/Panels (white)	NAD	NAD
K	21	Pool Bldg., north	Interior Brick Mortar (grey)	NAD	N/A
K	22	Pool Bldg., south	Interior Brick Mortar (grey)	NAD	N/A
L	**23**	**Pool Bldg., SW corner**	**Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**1.4% Chrysotile**	**NA/PS**
L	**24**	**Pool Bldg., NW corner**	**Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**NA/PS**	**NA/PS**
M	25	Pool Bldg. West Wall, NW side	Exterior metal Wall Panel Glazing (type 1) (grey)	NAD	NAD
M	26	Pool Bldg. West Wall, SW side	Exterior metal Wall Panel Glazing (type 1) (grey)	NAD	NAD
N	**27**	**Pool Bldg. West Wall, NW side**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**1.2% Chrysotile**	**NA/PS**
N	**28**	**Pool Bldg. West Wall, SW side**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**NA/PS**	**NA/PS**
O	**29**	**Pool Bldg. West Wall, NW side**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**1.2% Chrysotile**	**NA/PS**
O	**30**	**Pool Bldg. West Wall, SW side**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**NA/PS**	**NA/PS**
P	31	Auditorium, SE side	Cinderblock Mortar (grey)	NAD	N/A
P	32	Auditorium, SW side	Cinderblock Mortar (grey)	NAD	N/A
Q	33	Bldg A 1st Floor - Rm. A122	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
Q	34	Bldg. C 1st Floor – Rm. C145	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
R	35	Bldg A 1st Floor - Rm. A122	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
R	36	Bldg. C 1st Floor – Rm. C145	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
S	37	Bldg A 2nd Floor - Rm. A221	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
S	38	Bldg. B 2nd Floor – Rm. B212	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
T	39	Bldg A 2nd Floor - Rm. A221	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
T	40	Bldg. B 2nd Floor – Rm. B212	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
U	41	Bldg. A 1st Floor – Hallway at Rm. A122	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
U	42	Bldg. C 1st Floor – Hallway at Rm. C145	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
V	43	Bldg. A 1st Floor – Hallway at Rm. A122	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
V	44	Bldg. C 1st Floor – Hallway at Rm. C145	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
W	45	Bldg A 2nd Floor – Hallway at Rm. A221	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
W	46	Bldg. B 2nd Floor – Hallway at Rm. B212	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
X	47	Bldg A 2nd Floor – Hallway at Rm. A221	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
X	48	Bldg. B 2nd Floor – Hallway at Rm. B212	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
Y	49	Bldg A 1st Floor - Rm. A122	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD	NAD
Y	50	Bldg. C 1st Floor – Rm. C145	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD	<1% Chrysotile
Z	51	Bldg A 2nd Floor - Rm. A221	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	<1% Chrysotile	<1% Chrysotile
Z	52	Bldg. B 2nd Floor – Rm. B212	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	<1% Chrysotile	<1% Chrysotile

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
A1	53	Bldg. A 1st Floor – Hallway at Rm. A125	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD	N/A
A1	54	Bldg. A 1st Floor – Hallway at Rm. A101	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD	N/A
A1	55	Bldg. A 1st Floor – Boiler Room A013	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD	N/A
B1	56	Bldg. A 1st Floor – Hallway at Rm. A125	Wrap around Fiberglass Pipe Insulation (brown)	NAD	N/A
B1	57	Bldg. A 1st Floor – Hallway at Rm. A101	Wrap around Fiberglass Pipe Insulation (brown)	NAD	N/A
B1	58	Bldg. A 1st Floor – Boiler Room A013	Wrap around Fiberglass Pipe Insulation (brown)	NAD	N/A
C1	59	Bldg A, 1st Floor Stair AS2	Cinderblock Mortar (grey)	NAD	N/A
C1	60	Bldg. C, 1st Floor Stair C31	Cinderblock Mortar (grey)	NAD	N/A
D1	61	Bldg. C 1st Floor Hallway	Sheetrock Walls (white)	NAD	N/A
D1	62	Bldg. C 1st Floor Hallway	Sheetrock Walls (white)	NAD	N/A
E1	63	Bldg. C 1st Floor Hallway	Joint Compound assoc. with Sheetrock Walls (white)	NAD	N/A
E1	64	Bldg. C 1st Floor Hallway	Joint Compound assoc. with Sheetrock Walls (white)	NAD	N/A
F1	65	Gyms Bldg. – South Gym	Cinderblock Wall Mortar (grey)	NAD	N/A
F1	66	Gyms Bldg. – North Gym	Cinderblock Wall Mortar (grey)	NAD	N/A
G1	67	South Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD	NAD
G1	68	North Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD	NAD
H1	**69**	**Gym Roof – East side**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**1.2% Chrysotile**	**NA/PS**

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
H1	**70**	**Gym Roof – West side**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**NA/PS**	**NA/PS**
I1	**71**	**Bldg A Gas Room Exit, NW corner**	**Exterior Door Frame Caulking (grey)**	**1.2% Chrysotile**	**NA/PS**
I1	**72**	**Bldg A Gas Room Exit, NW corner**	**Exterior Door Frame Caulking (grey)**	**NA/PS**	**NA/PS**
1	1A	Gym Mechanical Room Roof	Roof Decking	NAD	N/A
1	1B	Gym Mechanical Room Roof	Roof Decking	NAD	N/A
2	2A	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD	N/A
2	2B	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD	N/A
3	3A	Gym Mechanical Room Roof	Fiberboard Insulation	NAD	N/A
3	3B	Gym Mechanical Room Roof	Fiberboard Insulation	NAD	N/A
4	4A	Gym Mechanical Room Roof	Fabric Barrier	NAD	N/A
4	4B	Gym Mechanical Room Roof	Fabric Barrier	NAD	N/A
5	5A	Main Gym Roof	Tar on Concrete Deck	NAD	NAD
5	5B	Lower Gym Roof	Tar on Concrete Deck	NAD	NAD
6	6A	Main Gym Roof	Paper to Foam Insulation	NAD	N/A
6	6B	Lower Gym Roof	Paper to Foam Insulation	NAD	N/A
7	7A	Main Gym Roof	Fabric Barrier	NAD	N/A
7	7B	Lower Gym Roof	Fabric Barrier	NAD	N/A

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

LIMITED INSPECTION
FOR
ASBESTOS-CONTAINING MATERIALS

White Plains High School
550 North Street
White Plains, NY 10605

Prepared For:

White Plains Public Schools
5 Homeside Lane
White Plains, NY 10605

Prepared By:

LOUIS BERGER & ASSOC., P.C.
565 Taxter Road, Suite 510
Elmsford, New York 10523
Tel. (914) 798-3710
Fax (914) 592-1734

PROJECT NO. 3000865.00
Submission: November 15, 2013

Louis Berger & Assoc., P.C.
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914 798-3710 Fax 914 592-1734 www.louisberger.com

November 15, 2013

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: Report of Limited Asbestos Inspection Services
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger & Assoc., P.C. (LBA) has completed a limited asbestos materials survey at the White Plains High School located at 550 North Street, White Plains, New York. The survey included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM).

The attached report presents descriptions and results of the material sampling procedures and analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

LOUIS BERGER & ASSOC., P.C. (LBA)

Craig Napolitano, CHMM
Director, Industrial Hygiene & Hazmat Services

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APPENDICES

1.0 INTRODUCTION

At the request of the White Plains Public Schools, Louis Berger & Assoc., P.C. (LBA) has conducted a limited asbestos materials survey for the presence of asbestos-containing materials (ACM) for the Ceiling Tile Bulk Sampling at White Plains High School located at 550 North Street, White Plains, New York. The asbestos inspection was conducted on October 18, 2013 by Mr. Josue Garcia. Mr. Garcia (Cert# 01-04292) is a New York State Department of Labor (NYSDOL) Asbestos Inspector. The limited inspection involved a visual examination and sampling of all suspect ceiling tiles throughout the school. Inspection results are presented in Appendix A.

2.0 FIELD SURVEY PROCEDURES AND SAMPLE ANALYSIS METHODS

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, Asbestos Hazard Emergency Response Act (AHERA)

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the survey, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the

procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 307 West 38th Street, New York, NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-9)
- New York State Environmental Laboratory Approval Program (Lab No. 11506)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

3.0 SUMMARY OF INSPECTION RESULTS

The limited asbestos inspection was conducted on October 18, 2013 and involved a visual examination of Ground Floor, First Floor and Second Floor. Sampling of all suspect ceiling tiles was also performed. Inspection results are presented in Appendix A.

Asbestos in amounts ***greater than 1%*** was found in the following material:

Throughout Building:

- **None**

Laboratory analysis and/or visual inspection confirmed ***no asbestos*** present in amounts greater than 1% in samples collected from the following materials:

Throughout Building:

- 1'x1' Pinhole Pattern Ceiling Tile, White
- 2'x4' Fissured Ceiling Tile, White
- 1'x1' Gouged Ceiling Tile, White
- 2'x4' Small Pinhole Ceiling Tile, White
- 1'x1' Fissured Ceiling Tile, White
- 2'x4' (2'x2' Design) Ceiling Tile, White
- 2'x2' Small Pinhole Ceiling Tile, White

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on analytical results and our observations, the following materials were determined to be ACM:

- **None**

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.

5.0 ASBESTOS ABATEMENT COST ESTIMATES

The unit costs listed in this section are based on other projects of similar size, location and complexity. The cost estimate is budgetary in nature, since there are many variables that will affect the final construction cost. The costs presented are based on extrapolations from current construction prices available to us for comparable work in this area. "Means" guides were consulted, when applicable, with regional price adjustments for this area. However, Berger relies primarily on costs obtained from similar work recently bid.

Prices are based on current costs associated with prevailing wages and a competitive bid situation. Quantities are derived from our observation and linear takes-offs where drawings were made available to us or schematic drawing could easily be created from available information. Actual construction costs may vary based on a fully developed scope of work delineated in construction plans and specifications.

There will be other factors affecting the costs at the time projects are actually scheduled and bid. Such factors include the overall size of the total work package bid by a contractor, unforeseen conditions, state of the economy, inflation and the availability of materials. If the project is phased, escalation in cost should be anticipated.

Cost estimates have been prepared with the following assumptions:

- Union labor or prevailing wage
- Insurance, profit and overhead costs have been estimated and will vary among contractors
- All work areas may not be able to be abated in a continuous fashion and down time may occur for varying periods.
- Electric power and water to be provided by others
- Prices do not include air monitoring costs
- Reinstallation work has not been factored into the cost estimates

Asbestos Material	Quantity	Unit Price	Cost Estimate
	0 SF	$10	$0
		ACM Removal Sub-Total	$0
		Decontaminations Units	$0
		Mobilization & Demobilization	$0
		Sub-Totals	$0
		Insurance @ 7%	$0
		Profit/Overhead @ 15%	$0

Notes:

1. The above cost includes the waste hauling charges, filing fees and other miscellaneous cost associated with asbestos abatement by the abatement contractor.

6.0 AREAS NOT ACCESSIBLE

Louis Berger & Assoc., P.C. inspected and sampled materials, which were observable and accessible to the survey team. It is possible, however, that additional suspect ACM may exist within interstitial space (i.e. above fixed ceilings, etc.), which were not accessible without using destructive means. Any materials that have not been tested and/or found asbestos positive must be assumed ACM.

7.0 LIMITATIONS, EXCEPTIONS, ASSUMPTIONS & CERTIFICATIONS

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of Berger's site visit, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which Berger is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon Berger's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein, at the site indicated, for the ceiling tile bulk sampling reassessment project.

It is important to recognize that even the most comprehensive scope of services may fail to detect all asbestos containing materials that may be associated with the property. Therefore, Berger cannot act as insurers and cannot "certify" that all ACM associated with the property have been identified, and no expressed or implied representation or warranty is included or intended in our reports, except that our services were performed, within the limits prescribed by our client, with the customary thoroughness and competence of our profession.

Prepared by:

Josue Garcia
Senior Environmental Specialist

Reviewed by:

Craig Napolitano, CHMM
Director, Industrial Hygiene
& Hazmat Services

APPENDIX A:
SUMMARY OF ASBESTOS BULK SAMPLE LOCATIONS, LABORATORY ANALYTICAL RESULTS AND CHAIN OF CUSTODY

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Homogeneous Area No.	Sample No.	Location	Material	ACM Quantity	Condition	Friability	PLM Result	TEM Result
01	01	Bldg. C West – Ground Floor, Auto Shop C002D	1'x1' Pinhole Pattern Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
01	02	Bldg. B – Second Floor, Room B220	1'x1' Pinhole Pattern Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
02	03	Bldg. A – Ground Floor, Storage A006	2'x4' Fissured Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
02	04	Bldg. C West – First Floor, Office C122	2'x4' Fissured Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
03	05	Bldg. A – First Floor, Room A114	1'x1' Gouged Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
03	06	Bldg. C West – First Floor, Lobby C128	1'x1' Gouged Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
04	07	Bldg. C West – First Floor, Conference C134	2'x4' Small Pinhole Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
04	08	Bldg. G – Ground Floor, Corridor G018A	2'x4' Small Pinhole Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
05	09	Bldg. B – Second Floor, Office B201B	1'x1' Fissured Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
05	10	Bldg. B – Second Floor, Office B201C	1'x1' Fissured Ceiling Tile, White	--	--	Non-Friable	NAD	NAD

Homogeneous Area No.	Sample No.	Location	Material	ACM Quantity	Condition	Friability	PLM Result	TEM Result
06	11	Bldg. C West – First Floor, Lobby C128	2'x4' (2'x2' Design) Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
06	12	Bldg. C East – First Floor, Room C151	2'x4' (2'x2' Design) Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
07	13	Bldg. C West – First Floor, Lobby C128	2'x2' Small Pinhole Ceiling Tile, White	--	--	Non-Friable	NAD	NAD
07	14	Bldg. C West – First Floor, Lobby C128	2'x2' Small Pinhole Ceiling Tile, White	--	--	Non-Friable	NAD	NAD

NAD = No Asbestos Detected N/A = Not Applicable **Bold = Positive for ACM** NA/PS = Not analyzed/ positive sample

Louis Berger
565 Taxter Road, Suite 510, Elmsford, NY 10523
Tel 914-798-3710 Fax 914-592-1734 www.louisberger.com

April 6, 2017

Mr. Frank Stefanelli
Director of Facilities
White Plains Public Schools
580 North Street
White Plains, NY 10605

Subject: Letter Report for Limited Asbestos Survey Services in Conjunction with the Steam Tunnel Project at the White Plains High School, 550 North Street, White Plains, NY

Dear Mr. Stefanelli:

Louis Berger (Berger) has completed a limited asbestos materials survey at the White Plains High School specifically in the steam tunnels. The limited asbestos survey was conducted on March 29 through 30, 2017 by Marvin Luccioni, a NYS DOL Licensed Asbestos Inspector (Cert# 03-11021). The limited asbestos survey included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) for the upcoming steam tunnel project. Berger inspected the following suspect materials in order to address specific concerns and suspect materials to be impacted by the current scope of work (SOW).

Homogeneous Groups	Location(s)	Material Description	No. of Samples	Results	Quantity
White Plains High School 550 North Street, White Plains, NY					
01	Bldg. A Steam Tunnels	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
02	Bldg. A Steam Tunnels	Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)	3	NAD	---
03	Bldg. A Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---
04	Bldg. A Steam Tunnels	Cloth Fabric over FG Pipe Ins. (Beige)	3	NAD	---
05	Bldg. A Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
06	**Bldg. B Steam Tunnels**	**Mudded Joints to FG Pipe Ins. (Gray)**	**3**	**33.30% Chrysotile**	**25 LF**
07	**Bldg. B Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**16.00% Chrysotile**	**50 SF**
08	Bldg. B Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---

09	Bldg. B Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
10	**Bldg. C Steam Tunnels**	**Mudded Joints to FG Pipe Ins. (Gray)**	**3**	**18.20% Chrysotile**	**35 LF**
11	**Bldg. C Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**28.60% Chrysotile**	**45 SF**
12	Bldg. C Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	<1.00% Chrysotile	---
13	Bldg. C Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
14	Bldg. D Steam Tunnels	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
15	**Bldg. D Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**28.60% Chrysotile**	**55 SF**
16	Bldg. D Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---
17	Bldg. D Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
18	**Bldg. E Steam Tunnels**	**Mudded Joints to FG Pipe Ins. (Gray)**	**3**	**27.30% Chrysotile**	**25 LF**
19	**Bldg. E Steam Tunnels**	**Debris (Mudded Joints/Pipe Ins.) inside Wall Penetrations & Ground (Gray)**	**3**	**22.20% Chrysotile**	**55 SF**
20	Bldg. E Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	NAD	---
21	Bldg. E Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
22	Bldg. E Steam Tunnels	Paper (Pipe) Ins. Debris on Ground (White)	3	NAD	---
23	Bldg. E Steam Tunnels	Cementitious Material on Ground (Gray)	2	NAD	---
24	Bldg. F Steam Tunnels	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
25	Bldg. F Steam Tunnels	Vapor Barrier Material on FG Pipe Ins. (Black)	3	<1.00% Chrysotile	---
26	Bldg. F Steam Tunnels	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
27	Bldg. F Pool Mechanical Room (Associated with AHU-1)	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
28	Bldg. F Pool Mechanical Room (Associated with AHU-1)	Vibration Cloth (Black)	2	NAD	---

29	Bldg. F Pool Mechanical Room (Associated with AHU-1)	Cloth Fabric to FG Duct Work Ins. (Beige)	2	NAD	---
30	Bldg. F Pool Mechanical Room (Associated with Abandoned AHU)	Vibration Cloth (Black)	2	NAD	---
31	Penthouse Mechanical Room E219A	Mudded Joints to FG Pipe Ins. (Gray)	3	NAD	---
32	Penthouse Mechanical Room E219A	Vapor Barrier Material on FG Pipe Ins. (Black)	3	<1.00% Chrysotile	---
33	Penthouse Mechanical Room E219A	Sealant to FG Pipe Ins. Seams (White)	2	NAD	---
34	Penthouse Mechanical Room E219A	Ceiling Plaster, Gray Only	3	NAD	---
35	Penthouse Mechanical Room E219A	Cloth Fabric to Ductwork FG Ins. (Beige)	2	NAD	---
36	Penthouse Mechanical Room E219A	Gaskets (Green)	2	NAD	---

NAD = No Asbestos Detected

Notes:

1. Quantities are estimations and should be confirmed by the contractor during the pre-abatement walkthrough.
2. Steam tunnels which have standing water must be pumped out and filtered using a filtration system by the contractor which then should be treated as contaminated ACM.

It is our hope that the information provided in this letter has met the project requirements. Thank you for the opportunity to provide you and your staff with our continued services. Please contact me at 212-612-7938 if you have any questions or require any additional information.

Sincerely,

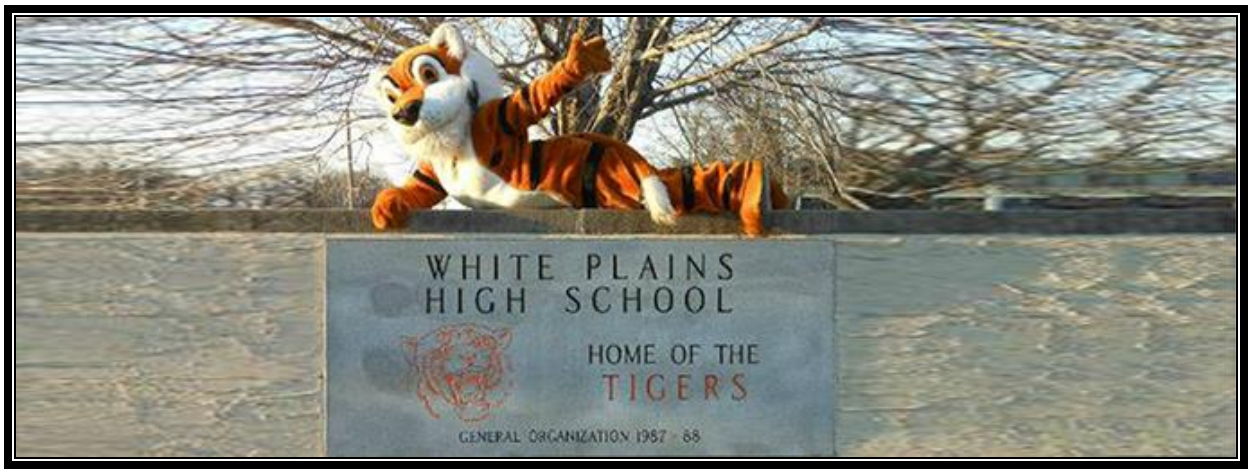
Louis Berger

Marvin Luccioni
Senior Environmental Specialist, Emergency Management & IH Services

FINAL REPORT FOR
ENVIRONMENTAL INSPECTION SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605



Prepared for:

White Plains City School District
5 Homeside Ave.
White Plains, NY 10605

Prepared by:

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Project No. 2042261.019
Final Submission Date: December 21st, 2017

Louis Berger
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December 21st, 2017

Mr. Frank Stefanelli
Director of Facilities
White Plains Public Schools
580 North Street
White Plains, NY 10605

Subject: **Final Report for Environmental Inspection Services in Conjunction with the Roof Replacement at the**

White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger (Berger) has completed an Asbestos-Containing Materials (ACM) and Polychlorinated Biphenyls (PCBs) inspection at White Plains High School located at 550 North Street, White Plains NY 10605. The inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM) and Polychlorinated Biphenyls (PCBs). The scope of this inspection is based on the upcoming roof replacement project.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

LOUIS BERGER

Craig Napolitano, CHMM
Vice President, Emergency Management & IH Services

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Appendices

1.0 EXECUTIVE SUMMARY

Louis Berger (Berger) has performed an asbestos and PCB inspection at White Plains High School , located at 550 North Street, White Plains NY 10605. The intent of this survey was to determine the presence and/or absence of Asbestos-Containing Materials (ACM) and Polychlorinated Biphenyls (PCBs) that may be impacted during the upcoming roof replacement project.

Alex Smolyar and Marvin Luccioni of Louis Berger performed this survey on October 13th & 27th, 2017. Mr. Smolyar has licensing as a New York State Department of Labor (NYSDOL) Asbestos Inspector (Cert #12-07624). Mr. Luccioni has licensing as a New York State Department of Labor (NYSDOL) Asbestos Inspector (Cert #03-11021). The results of the visual inspection and bulk sample analysis determined that the following suspect ACM and PCB materials may be impacted by the upcoming roof replacement project:

A. ASBESTOS-CONTAINING MATERIALS

Analytical results of the bulk samples collected on 10/13 & 27/17 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results from previous LB survey report dated 09/11/13 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**

Analytical results of the bulk samples collected and/or visual examination on 10/13 & 27/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Screed, Gray (Roof C)
- Bottom Membrane, Black (Roof C)
- Felt Paper below Foam, Black (Roof C)
- Felt Paper on top of Foam, Black (Roof C)
- Perlite Insulation, Brown (Roof C)
- Top Membrane, Black (Roof C)
- Pitch Pocket Tar, Black (Roof C)
- Hatch Flashing, Black (Roof C)
- Screed, Gray (Roof A)
- Felt Paper below Foam, Black (Roof A)
- Felt Paper on top of Foam, Black (Roof A)
- Top Membrane, Black (Roof A)
- Screed, Gray (Roofs B, D, E & F)
- Felt Paper on Bottom of Foam, Black (Roofs B, D, E & F)
- Felt Paper on top of Foam, Black (Roofs B, D, E & F)

- Top Insulation Membrane, Black (Roofs B, D, E & F)
- Felt Paper on top of Roofing Membrane, Black (Roofs B, D, E & F)
- Cap Flashing Caulking, Gray (Roofs B, D, E & F)
- Perimeter Base Flashing, Black (Roofs B, D, E & F)
- Drain Flashing, Black (Roofs B, D, E & F)
- Tar on Mechanical Units, Black (Roofs B, D, E & F)
- Tar assoc. with Pitch Pockets at Ladder, Black (Roofs B, D, E & F)
- Mechanical Unit Flashing, Black (Roofs B, D, E & F)
- Hatch Flashing, Black (Roofs B, D, E & F)
- Canvas to FG to Drain Bowls, White (Throughout Interior)
- Cementitious Ceiling, White (Throughout Interior)
- Tectum Ceiling (Throughout Interior)

Analytical results of the bulk samples collected and/or visual examination on LB previous survey report dated 09/11/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Interior Brick Mortar, Grey
- Cinderblock Mortar, Grey
- 1'x1' Pinhole Ceiling Tiles, White
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings Insulation assoc. with Fiberglass Pipe Insulation, Grey
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound assoc. with Sheetrock, White
- Caulking at Metal Exhaust Vent Edge, Grey
- Roof Decking (Gym Mech. Room Roof)
- Paper to Foam Insulation (Gym & Gym Mech. Roofs)
- Fiberboard Insulation (Gym & Gym Mech. Roofs)
- Fabric Barrier (Gym & Gym Mech. Roofs)
- Tar on Concrete Deck (Gym Roof)

The following materials as per 2017 AHERA, **did not contain asbestos** based on previous reporting and/or sampling

- 1'x1' Pinhole Pattern Ceiling Tile, White
- 2'x4' Pinhole Ceiling Tiles, White
- 1'x1' Gouged Ceiling Tiles, White
- 2'x4' Small Pinhole Ceiling Tiles, White
- 1'x1' Fissure Ceiling Tiles, White
- 2'x4' (2'x2' Design) Ceiling Tiles, White
- 2'x2' Small Pinhole Ceiling Tiles, White

- Interior Brick Mortar, Gray
- Cinderblock Mortar, Gray
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings assoc. with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound assoc. with Sheetrock, White

B. PCB-CONTAINING MATERIALS

Analytical results of the bulk samples collected indicate that the following materials **contain PCB** (greater than 50 PPM).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain PCB** (less than 50 PPM);

- Cap Flashing Caulking, Gray (Roofs B, D, E & F)

2.0 FIELD SURVEY PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the survey, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 528 Mineola Ave., Carle Place NY 11514. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-10)
- New York State Environmental Laboratory Approval Program (Lab No. 11469)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102344)

POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761) and the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605). These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for ACM and PCBs that may be impacted by the upcoming roof replacement project:

- Roofs A through F

A. ASBESTOS-CONTAINING MATERIAL ASSESSMENT

Materials examined during the inspection included:

- Screed, Gray (Roof C)
- Bottom Membrane, Black (Roof C)
- Felt Paper below Foam, Black (Roof C)
- Felt Paper on top of Foam, Black (Roof C)
- Perlite Insulation, Brown (Roof C)
- Top Membrane, Black (Roof C)
- Pitch Pocket Tar, Black (Roof C)
- Hatch Flashing, Black (Roof C)
- Screed, Gray (Roof A)
- Felt Paper below Foam, Black (Roof A)
- Felt Paper on top of Foam, Black (Roof A)
- Top Membrane, Black (Roof A)
- Screed, Gray (Roofs B, D, E & F)
- Felt Paper on Bottom of Foam, Black (Roofs B, D, E & F)
- Felt Paper on top of Foam, Black (Roofs B, D, E & F)
- Top Insulation Membrane, Black (Roofs B, D, E & F)
- Felt Paper on top of Roofing Membrane, Black (Roofs B, D, E & F)
- Cap Flashing Caulking, Gray (Roofs B, D, E & F)
- Perimeter Base Flashing, Black (Roofs B, D, E & F)
- Drain Flashing, Black (Roofs B, D, E & F)
- Tar on Mechanical Units, Black (Roofs B, D, E & F)
- Tar assoc. with Pitch Pockets at Ladder, Black (Roofs B, D, E & F)
- Mechanical Unit Flashing, Black (Roofs B, D, E & F)
- Hatch Flashing, Black (Roofs B, D, E & F)
- Canvas to FG to Drain Bowls, White (Throughout Interior)
- Cementitious Ceiling, White (Throughout Interior)
- Tectum Ceiling (Throughout Interior)

Analytical results of the bulk samples collected on 10/13 & 27/17 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **None**

Analytical results from previous LB survey report dated 09/11/13 indicate that the following materials **contain asbestos** (greater than 1-percent).

- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**

Analytical results of the bulk samples collected and/or visual examination on 10/13 & 27/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Screed, Gray (Roof C)
- Bottom Membrane, Black (Roof C)
- Felt Paper below Foam, Black (Roof C)
- Felt Paper on top of Foam, Black (Roof C)
- Perlite Insulation, Brown (Roof C)
- Top Membrane, Black (Roof C)
- Pitch Pocket Tar, Black (Roof C)
- Hatch Flashing, Black (Roof C)
- Screed, Gray (Roof A)
- Felt Paper below Foam, Black (Roof A)
- Felt Paper on top of Foam, Black (Roof A)
- Top Membrane, Black (Roof A)
- Screed, Gray (Roofs B, D, E & F)
- Felt Paper on Bottom of Foam, Black (Roofs B, D, E & F)
- Felt Paper on top of Foam, Black (Roofs B, D, E & F)
- Top Insulation Membrane, Black (Roofs B, D, E & F)
- Felt Paper on top of Roofing Membrane, Black (Roofs B, D, E & F)
- Cap Flashing Caulking, Gray (Roofs B, D, E & F)
- Perimeter Base Flashing, Black (Roofs B, D, E & F)
- Drain Flashing, Black (Roofs B, D, E & F)
- Tar on Mechanical Units, Black (Roofs B, D, E & F)
- Tar assoc. with Pitch Pockets at Ladder, Black (Roofs B, D, E & F)
- Mechanical Unit Flashing, Black (Roofs B, D, E & F)
- Hatch Flashing, Black (Roofs B, D, E & F)
- Canvas to FG to Drain Bowls, White (Throughout Interior)
- Cementitious Ceiling, White (Throughout Interior)
- Tectum Ceiling (Throughout Interior)

Analytical results of the bulk samples collected and/or visual examination on LB previous survey report dated 09/11/17 indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Interior Brick Mortar, Grey
- Cinderblock Mortar, Grey

- 1'x1' Pinhole Ceiling Tiles, White
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings Insulation assoc. with Fiberglass Pipe Insulation, Grey
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound assoc. with Sheetrock, White
- Caulking at Metal Exhaust Vent Edge, Grey
- Roof Decking (Gym Mech. Room Roof)
- Paper to Foam Insulation (Gym & Gym Mech. Roofs)
- Fiberboard Insulation (Gym & Gym Mech. Roofs)
- Fabric Barrier (Gym & Gym Mech. Roofs)
- Tar on Concrete Deck (Gym Roof)

The following materials as per 2017 AHERA, **did not contain asbestos** based on previous reporting and/or sampling

- 1'x1' Pinhole Pattern Ceiling Tile, White
- 2'x4' Pinhole Ceiling Tiles, White
- 1'x1' Gouged Ceiling Tiles, White
- 2'x4' Small Pinhole Ceiling Tiles, White
- 1'x1' Fissure Ceiling Tiles, White
- 2'x4' (2'x2' Design) Ceiling Tiles, White
- 2'x2' Small Pinhole Ceiling Tiles, White
- Interior Brick Mortar, Gray
- Cinderblock Mortar, Gray
- Mastic assoc. with 1'x1' Pinhole Ceiling Tiles, Brown
- Fittings assoc. with Fiberglass Pipe Insulation, Gray
- Wrap around Fiberglass Pipe Insulation, Brown
- Sheetrock, White
- Joint Compound assoc. with Sheetrock, White

B. PCB-CONTAINING MATERIAL ASSESSMENT

Materials examined during the Inspection included:

- Cap Flashing Caulking, Gray (Roofs B, D, E & F)

Based upon visual inspection and bulk sample, PCBs have been confirmed to exist in the following materials:

- **None**

PCB was **not detected** in the following testing combinations within the building via bulk sample analysis:

- Cap Flashing Caulking, Gray (Roofs B, D, E & F)

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the upcoming roof replacement project. The following suspect materials were sampled and analyzed for asbestos content:

4.1 Table 4.1 – Suspect Materials Inspected

HOMOGENOUS AREA	LOCATION	MATERIAL	ASBESTOS CONTENT
Samples collected by LB on 10/13/17			
A	Roof C	Screed, Gray	NAD
B	Roof C	Bottom Membrane, Black	NAD
C	Roof C	Felt Paper below Foam, Black	NAD
D	Roof C	Felt paper on top of Foam, Black	NAD
E	Roof C	Perlite Insulation, Brown	NAD
F	Roof C	Top Membrane, Black	NAD
G	Roof C	Pitch Pocket Tar, Black	NAD
H	Roof C	Hatch Flashing, Black	NAD
I	Roof A	Screed, Gray	NAD
J	Roof A	Felt Paper below Foam, Black	NAD
K	Roof A	Felt Paper on top of Foam, Black	NAD
L	Roof A	Top Membrane, Black	NAD
M	Roofs B, D, E & F	Screed, Gray	NAD
N	Roofs B, D, E & F	Felt Paper on bottom of Foam, Black	NAD
O	Roofs B, D, E & F	Felt Paper on top of Foam, Black	NAD

P	Roofs B, D, E & F	Top Insulation Membrane, Black	NAD
Q	Roofs B, D, E & F	Felt Paper on top of Roofing Membrane, Black	NAD
R	Roofs B, D, E & F	Cap Flashing Caulking, Gray	NAD
S	Roofs B, D, E & F	Perimeter Base Flashing, Black	<1% Chrysotile
T	Roofs B, D, E & F	Drain Flashing, Black	NAD
U	Roofs B, D, E & F	Tar on Mechanical Units, Black	<1% Chrysotile
V	Roofs B, D, E & F	Tar assoc. with Pitch Pockets at Ladder, Black	NAD
W	Roofs B, D, E & F	Mechanical Unit Flashing, Black	NAD
X	Roofs B, D, E & F	Hatch Flashing, Black	NAD
Samples collected by LB on 10/27/17			
01	Throughout Interior	Canvas to FG to Drain Bowls, White	NAD
02	Throughout Interior	Cementitious Ceiling, White	NAD
03	Throughout Interior	Tectum Ceiling,	NAD

Bold = Positive for ACM
NAD = No Asbestos Detected
NA/PS = Not analyzed/ positive sample

4.2 CONDITION AND FRIABLITY ASSESSMENT TABLE

For each inspection conducted, the inspector classifies ACM or Assumed ACM materials by friability and condition. This helps to determine the extent of damage in certain areas as well as the potential for further damage and Asbestos release due to disturbance of the material.

Table 4.2 – Condition and Friability Assessment

Location	Material	Quantity	Friability	Condition
Gym Mechanical Roof	Caulking at Flashing	30 LF (5 SF)	Non-friable	Good

Condition Definitions:
Good: None/Minimal apparent damage to ACM
Fair: Up to 10% localized damage or up to 25% of the entire ACM is damaged
Poor: Over 10% localized damage or over 25% of the entire ACM is damaged

4.3 SAMPLE ANALYSIS TABLE

Laboratory analysis results, in tabular form, are included in Appendix A.

B. PCB-CONTAINING MATERIALS ASSESSMENT

The PCB Inspection involved a thorough visual examination of all areas that may be impacted by the upcoming roof replacement project. The following suspect materials were sampled and analyzed for PCB content (greater than 50 PPM):

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
No PCB was found during this inspection.			

Bold = Positive for PCB ND = No PCB Detected

5.0 AREAS NOT ACCESSIBLE

During the survey the following areas were not accessible:

Void Spaces within Interior Walls/Ceilings: No destructive sampling was performed on concealed spaces in walls to access plenum, chases etc. It should be assumed that asbestos and PCB containing materials exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

Building Envelope: No destructive sampling was performed on the building envelope. It should be assumed that asbestos containing materials exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM has been identified in our inspection effort that may be impacted as part of the upcoming roof replacement project. These materials, reported in Section 3.0 of this report, may require complete removal prior to the start of the project. No PCBs were found.

7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of Berger's efforts for the environmental inspection work for the upcoming roof replacement project.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of Berger's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which Berger is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon Berger's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:

Marvin Luccioni
Vice President,
Emergency Management & IH Services

Reviewed by:

Craig Napolitano, CHMM
Vice President,
Emergency Management & IH Services

APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM

WHITE PALINS HIGH SCHOOL
550 NORTH STREET, WHITE PLAINS NY 10605
LB PROJECT NO.: 2042261.019

Homogeneous Area No.	Sample No.	Material	Location	PLM Result	TEM Result
Samples collected by LB on 10/13/17					
A	01	Screed, Gray	Roof C	NAD	N/A
A	02	Screed, Gray	Roof C	NAD	N/A
B	03	Bottom Membrane, Black	Roof C	NAD	NAD
B	04	Bottom Membrane, Black	Roof C	NAD	NAD
C	05	Felt Paper below Foam, Black	Roof C	NAD	NAD
C	06	Felt Paper below Foam, Black	Roof C	NAD	NAD
D	07	Felt paper on top of Foam, Black	Roof C	NAD	NAD
D	08	Felt paper on top of Foam, Black	Roof C	NAD	NAD
E	09	Perlite Insulation, Brown	Roof C	NAD	N/A
E	10	Perlite Insulation, Brown	Roof C	NAD	N/A
F	11	Top Membrane, Black	Roof C	NAD	NAD
F	12	Top Membrane, Black	Roof C	NAD	NAD
G	13	Pitch Pocket Tar, Black	Roof C	NAD	NAD
G	14	Pitch Pocket Tar, Black	Roof C	NAD	NAD
H	15	Hatch Flashing, Black	Roof C	NAD	NAD
H	16	Hatch Flashing, Black	Roof C	NAD	NAD

Homogeneous Area No.	Sample No.	Material	Location	PLM Result	TEM Result
I	17	Screed, Gray	Roof A	NAD	N/A
I	18	Screed, Gray	Roof A	NAD	N/A
J	19	Felt Paper below Foam, Black	Roof A	NAD	NAD
J	20	Felt Paper below Foam, Black	Roof A	NAD	NAD
K	21	Felt Paper on top of Foam, Black	Roof A	NAD	NAD
K	22	Felt Paper on top of Foam, Black	Roof A	NAD	NAD
L	23	Top Membrane, Black	Roof A	NAD	NAD
L	24	Top Membrane, Black	Roof A	NAD	NAD
M	25	Screed, Gray	Roof D	NAD	N/A
M	26	Screed, Gray	Roof B	NAD	N/A
N	27	Felt Paper on bottom of Foam, Black	Roof D	NAD	NAD
N	28	Felt Paper on bottom of Foam, Black	Roof B	NAD	NAD
O	29	Felt Paper on top of Foam, Black	Roof D	NAD	NAD
O	30	Felt Paper on top of Foam, Black	Roof B	NAD	NAD
P	31	Top Insulation Membrane, Black	Roof D	NAD	NAD
P	32	Top Insulation Membrane, Black	Roof B	NAD	NAD
Q	33	Felt Paper on top of Roofing Membrane, Black	Roof D	NAD	NAD
Q	34	Felt Paper on top of Roofing Membrane, Black	Roof B	NAD	NAD
R	35	Cap Flashing Caulking, Gray	Roof B	NAD	NAD
R	36	Cap Flashing Caulking, Gray	Roof B	NAD	NAD
S	37	Perimeter Base Flashing, Black	Roof B	NAD	<1% Chrysotile
S	38	Perimeter Base Flashing, Black	Roof D	NAD	<1% Chrysotile

Homogeneous Area No.	Sample No.	Material	Location	PLM Result	TEM Result
T	39	Drain Flashing, Black	Roof B	NAD	NAD
T	40	Drain Flashing, Black	Roof D	NAD	NAD
U	41	Tar on Mechanical Units, Black	Roof D	NAD	NAD
U	42	Tar on Mechanical Units, Black	Roof D	NAD	NAD
V	43	Tar assoc. with Pitch Pockets at Ladder, Black	Roof D	NAD	NAD
V	44	Tar assoc. with Pitch Pockets at Ladder, Black	Roof F	NAD	NAD
W	45	Mechanical Unit Flashing, Black	Roof D	NAD	NAD
W	46	Mechanical Unit Flashing, Black	Roof E	NAD	NAD
X	47	Hatch Flashing, Black	Roof B	NAD	NAD
X	48	Hatch Flashing, Black	Roof D	NAD	NAD
Samples collected by LB on 10/27/17					
01	0	Canvas to FG to Drain Bowls, White	Mech Room near Pool	NAD	N/A
01	02	Canvas to FG to Drain Bowls, White	Mech Room near Pool	NAD	N/A
02	03	Cementitious Ceiling, White	Mech Room near Pool	NAD	N/A
02	04	Cementitious Ceiling, White	Mech Room near Pool	NAD	N/A
	05	Cementitious Ceiling, White	Mech Room near Pool	NAD	N/A
03	06	Tectum Ceiling,	Above Gym	NAD	NAD
03	07	Tectum Ceiling,	Above Gym	NAD	NAD

Bold = Contains Asbestos
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not Analyzed, Positive Stop
$^{(V)}$ = >10.0% Vermiculite

FINAL REPORT OF ENVIRONMENTAL SERVICES

Performed at:

WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Prepared by:

The Louis Berger Group, Inc.
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Elmsford, New York 10523
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Project No. 3000825
Submission Date: September 11, 2013

The Louis Berger Group Inc.
565 Taxter Road, 5th Floor, Elmsford, NY 10523
Tel 914 798 3710 Fax 914 592 1734 www.louisberger.com

September 11, 2013

Mr. Frank Stefanelli
Director of Facilities
White Plains City School District
508 North Street
White Plains, NY 10605

Subject: Final Report of Environmental Services
White Plains High School
550 North Street
White Plains, NY 10605

Dear Mr. Stefanelli:

Louis Berger Group (LBG) has completed a material Inspection at White Plains High School located at 550 North Street, White Plains, NY 10605. The Inspection included visual observation, material sampling, and laboratory sample analysis of suspect Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) associated with proposed renovations.

The attached report presents descriptions and results of the material sampling procedures and visual analysis. Relevant general project information is provided, followed by our findings, assessments and recommendations. Laboratory analysis data and certifications are provided in the Appendices.

If you have any questions concerning this report or if we may be of further assistance to you, please contact us.

Sincerely,

THE LOUIS BERGER GROUP (LBG)

Craig Napolitano, CHMM
Director, Industrial Hygiene & Hazmat Services

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Appendices

1.0 EXECUTIVE SUMMARY

Louis Berger Group, Inc (LBG) has performed a renovation specific material Inspection for the presence or absence of Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) at White Plains High School located at 550 North Street, White Plains, NY 10605. The intent of this Inspection was to screen for Asbestos-Containing Materials (ACM), and Polychlorinated Biphenyls (PCBs) that may be impacted during the proposed renovations.

Michael Gelfand and Dmitri Kirnossenko of LBG performed this Inspection on July 24, 2013, and Andrew Cheskin performed an additional inspection on September 4, 2013. Mr. Kirnossenko has New York State Department of Labor (NYSDOL) Asbestos Inspector License (Cert# 07-01720). Mr. Gelfand has NYSDOL Asbestos Inspector License (Cert# 98-17113). Mr. Cheskin has NYSDOL Asbestos Inspector License (Cert# 05-04280). The results of the visual inspection and bulk sample analysis determined that the following suspect ACM and PCB materials may be impacted by the renovation project:

A. ASBESTOS-CONTAINING MATERIAL

Analytical results of the bulk samples collected by Berger indicate that the following materials **contain asbestos** (greater than 1-percent).

- **9”x9” Beige Floor Tiles (Auditorium)**
- **Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)**
- **Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)**
- **Exterior Metal Wall Panel Frame Caulking (Pool Building)**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

Analytical results of the bulk samples collected indicate that the following materials **did not contain asbestos** (less than 1-percent);

- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)

- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

The following materials were **assumed to contain asbestos**:

- **9"x9" Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C**
- **9"x9" Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor**
- **Ceiling Scratch Coat, Pool Building**
- **Ceiling Tectum Tiles, North and South Gym**
- **Built-up Roofing on Gym Roof**
- **Mechanical Equipment Flashing on Gym Roof**

B. PCB-CONTAINING MATERIAL

Analytical results of the bulk samples collected indicate that the following materials **contain PCB** (greater than 50 PPM).

- **None**

Analytical results of the bulk samples collected indicate that the following materials **did not contain PCB** (less than 50 PPM);

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

2.0 FIELD INSPECTION PROCEDURES AND SAMPLE ANALYSIS METHODS

ASBESTOS-CONTAINING MATERIAL

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, Asbestos Hazard Emergency Response Act (AHERA).

Field information was organized in accordance with the AHERA methodology of homogenous area (HA). During the Inspection, reasonable effort was made to identify all locations and types of ACM materials associated with the scope of work. Sampling has included multiple samples of the same materials chosen at random. However, due to inconsistencies of a manufacturer's processes and the contractor's installation methods, materials of similar construction may contain various amounts of asbestos. Furthermore, some materials that were not originally specified to contain asbestos may in fact contain this mineral. For example, cementitious pipe insulation and plaster were frequently mixed with asbestos at the construction site for ease of application. Locating all asbestos materials can only be definitively achieved by conducting exploratory demolition and sampling every section of pipe insulation, fitting or valve covering, fireproofing, and other suspect ACM.

Bulk samples of suspect ACM are analyzed using polarized light microscopy (PLM) coupled with dispersion staining, as described in 40 CFR Part 763 and the National Emissions Standard for Hazardous Air Pollutants (NESHAPS). NESHAPS is the standard industry protocol for the determination of asbestos in building materials. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The color displays that result are compared to a standardized atlas whereby the specific variety of asbestos is determined. It should also be recognized that PLM is primarily a qualitative identification method whereby asbestos percentage, if any, is estimated. While EPA, New York State, and New York City regulations governing ACM consider materials containing greater then 1-percent as asbestos, accurately quantifying asbestos content below 5-percent has been shown to be unreliable.

The New York State Department of Health has recently revised the PLM Stratified Point Counting Method. The March 25th, 2011 method, "Polarized Light Microscopy Methods for Identifying and Quantifying Asbestos in Bulk Samples" can be found as Item 198.1 in the Environmental Laboratory Approval program (ELAP) Certification manual. Whereas the procedure of analysis for bulk samples that fall into the category of "Non-friable Organically Bound" (NOB) can be found in the March 25th 2011 method "Polarized-Light Microscope Method for Identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples", Item 198.6 in the ELAP Certification Manual. This category includes any sample in a flexible to rigid asphalt or vinyl matrix (floor tiles, mastic, roofing shingles, roofing felt, etc.). These samples must be "ashed" in a muffle furnace at 480-degrees Celsius (to remove organic matrix), treated with acid (to remove any mineral carbonate), and filtered through a 0.4-micron polycarbonate filter before being analyzed by PLM. The sample must be weighted between each

of these steps to track the percent loss of organic matrix.

ELAP has determined that analysis of NOB materials is not reliably performed by PLM. Therefore, if PLM analysis yields results of 1-percent asbestos or less, the result must be confirmed by TEM. For bulk samples that undergo TEM analysis, the March 25th, 2011 method "Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable organically Bound Bulk Samples" must be used and can be found as Item 198.4 in the ELAP Certification Manual. ELAP certified laboratories must include the following statement with their PLM analysis results for each "negative" (1-percent or less asbestos) NOB sample: "Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-ACM, confirmation must be made by quantitative transmission electron microscopy".

All samples are initially analyzed by Polarized Light Microscopy in accordance with Item 198.1 and 198.6 of the ELAP Certification Manual. Samples which yield a negative PLM result and which are classified as a "non-friable" material, are then re-analyzed utilizing TEM methodology in accordance with Item 198.4 of the ELAP Certification Manual. The laboratory performing both these analysis procedures is EMSL located at 307 West 38th Street, New York, NY 10018. The laboratory has received accreditation from the following agencies:

- National Voluntary Laboratory Accreditation Program (Lab Code 101048-9)
- New York State Environmental Laboratory Approval Program (Lab No. 11506)
- American Industrial Hygiene Association Accredited Laboratory (Lab No. 102581)

POLYCHLORINATED BIPHENYLS (PCBs)

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications.

Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include: Transformers and capacitors, Oil used in motors and hydraulic systems, Fluorescent light ballasts, Adhesives and tapes, Caulking, Plastics, etc.

The PCBs used in these products were chemical mixtures made up of a variety of individual

chlorinated biphenyl components, known as congeners. Most commercial PCB mixtures are known in the United States by their industrial trade names. The most common trade name is aroclor.

Polychlorinated biphenyls (PCBs) are regulated pursuant to the United States Environmental Protection Agency Code of Federal Regulations (40 CFR Part 761), the Toxic Substances Control Act (TSCA – 15 U.S.C. 2605), New York State Department of Environmental Conservation 6NYCRR 370-376 and federal Occupational Safety and Health Administration (OSHA) 29CFR 1926 & 1910. These regulations require certain testing and reporting requirements to determine management, recycling and disposal options for PCBs.

3.0 INSPECTION SCOPE AND MATERIAL ASSESSMENT

The areas inspected for suspect ACM and PCB materials that may be impacted by the proposed renovations. Locations surveyed include:

- Building Exterior
- Hallways
- Rooms
- Auditorium
- Gymnasiums
- Pool
- Gym Roof, Gym Mechanical Room Roof

A. ASBESTOS-CONTAINING MATERIAL

Materials examined during the Berger Inspection included:

- 9”x9” Beige Floor Tiles (Auditorium)
- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg. A Gas Room Exit)
- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- 9”x9” Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C

- 9”x9” Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor
- Ceiling Scratch Coat, Pool Building
- Ceiling Tectum Tiles, North and South Gym
- Roof Decking
- Paper to Foam Insulation
- Fiberboard Insulation
- Fabric Barrier
- Tar on Concrete Deck

Based upon visual inspection and bulk sample analysis asbestos has been confirmed to exist in the following materials:

- **9”x9” Beige Floor Tiles (Auditorium)**
- **Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)**
- **Exterior metal Wall Panel Glazing (type 2) & Contaminated type 1(Pool Building)**
- **Exterior Metal Wall Panel Frame Caulking (Pool Building)**
- **Caulking at Flashing on Gym Mechanical Roof (Gym Roof)**
- **Exterior Door Frame Caulking (Bldg. A Gas Room Exit)**

Asbestos was **not detected** in the following materials via PLM and/or TEM analysis:

- Baseboard Glue (brown)
- Baseboard Molding (brown)
- Mastic assoc. with 9”x9” Floor Tiles (black)
- 2’x4’ Ceiling Tiles (grey)
- Wall Ceramic Tile Grout (white)
- Floor Ceramic Tile Grout (brown)
- Glazing at Entrance Aluminum Framing/Panels (white)
- Interior Brick Mortar (grey)
- Cinderblock Mortar (grey)
- 1’x1’ Pinhole Ceiling Tiles (white)
- Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)
- Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)
- Wrap around Fiberglass Pipe Insulation (brown)
- Sheetrock Walls (white)
- Joint Compound assoc. with Sheetrock Walls (white)
- Cinderblock Wall Mortar (grey)
- Caulking at Metal Exhaust Vent Edges (grey)
- Roof Decking, Gym Mechanical Room Roof
- Paper to Foam Insulation, Gym Mechanical Room Roof and Gym Roof
- Fiberboard Insulation, Gym Mechanical Room Roof and Gym Roof

- Fabric Barrier, Gym Mechanical Room Roof and Gym Roof
- Tar on Concrete Deck, Gym Roof

The following materials were **assumed to contain asbestos**:

- **9"x9" Beige Floor Tiles & Assoc. Mastic, throughout Rooms in Bldgs. A, B, C**
- **9"x9" Beige Floor Tiles with White/Black Lines & assoc. mastic, Pool Connection Corridor**
- **Ceiling Scratch Coat, Pool Building**
- **Ceiling Tectum Tiles, North and South Gym**

B. PCB-CONTAINING MATERIAL

Materials examined during the Inspection included:

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

Based upon visual inspection and bulk sample, PCBs have been confirmed to exist in the following materials:

- **None**

PCB was **not detected** in the following testing combinations within the building via bulk sample analysis:

- Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (Pool Building)
- Exterior metal Wall Panel Glazing (type 1) (Pool Building)
- Exterior metal Wall Panel Glazing (type 2) (Pool Building)
- Exterior Metal Wall Panel Frame Caulking (Pool Building)
- Caulking at Metal Exhaust Vent Edges (Gym Roof)
- Caulking at Flashing on Gym Mechanical Roof (Gym Roof)
- Exterior Door Frame Caulking (Bldg A Gas Room Exit)
- Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey) (Bldgs. A, B, C)

4.0 INSPECTION RESULTS

A. ASBESTOS-CONTAINING MATERIAL

The asbestos inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were sampled and analyzed for asbestos content by Berger:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
A	Auditorium	Baseboard Glue (brown)	NAD
B	Auditorium	Baseboard Molding (brown)	NAD
C	Auditorium	Mastic assoc. with 9”x9” Floor Tiles (black)	NAD
D	**Auditorium**	**9”x9” Beige Floor Tiles**	**ACM**
E	Pool Connection Corridor	2’x4’ Ceiling Tiles (grey)	NAD
F	Pool Connection Corridor	Baseboard Glue (brown)	NAD
G	Pool Connection Corridor	Baseboard (brown)	NAD
H	Pool Bldg.	Wall Ceramic Tile Grout (white)	NAD
I	Pool Bldg.	Floor Ceramic Tile Grout (brown)	NAD
J	Pool Bldg.	Glazing at Entrance Aluminum Framing/Panels (white)	NAD
K	Pool Bldg.	Interior Brick Mortar (grey)	NAD
L	Pool Bldg.	**Interior Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**ACM**
M	**Pool Bldg.**	**Exterior metal Wall Panel Glazing (type 1) (grey)**	**Contaminated ACM**
N	**Pool Bldg.**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**ACM**
O	**Pool Bldg.**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**ACM**
P	Auditorium	Cinderblock Mortar (grey)	NAD
Q	1st Floor Rooms	1’x1’ Pinhole Ceiling Tiles (white)	NAD
R	1st Floor Rooms	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
S	2nd Floor Rooms	1’x1’ Pinhole Ceiling Tiles (white)	NAD
T	2nd Floor Rooms	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
U	1st Floor Hallways	1’x1’ Pinhole Ceiling Tiles (white)	NAD
V	1st Floor Hallways	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD
W	2nd Floor Hallways	1’x1’ Pinhole Ceiling Tiles (white)	NAD
X	2nd Floor Hallways	Mastic assoc. with 1’x1’ Pinhole Ceiling Tiles (brown)	NAD

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	ASBESTOS CONTENT
Y	Bldgs. A, B, C 1st Floor	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD
Z	Bldgs. A, B, C 2nd Floor	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD
A1	Bldgs. A, B, C	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD
B1	Bldgs. A, B, C	Wrap around Fiberglass Pipe Insulation (brown)	NAD
C1	Bldgs. A, B, C	Cinderblock Mortar (grey)	NAD
D1	Bldgs. A, B, C	Sheetrock Walls (white)	NAD
E1	Bldgs. A, B, C	Joint Compound assoc. with Sheetrock Walls (white)	NAD
F1	Gym Bldg.	Cinderblock Wall Mortar (grey)	NAD
G1	Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD
H1	**Gym Roof**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**ACM**
I1	**Bldg. A Gas Room Exit (NW corner of Bldg.)**	**Exterior Door Frame Caulking (grey)**	**ACM**
1	Gym Mechanical Room Roof	Roof Decking	NAD
2	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD
3	Gym Mechanical Room Roof	Fiberboard Insulation	NAD
4	Gym Mechanical Room Roof	Fabric Barrier	NAD
5	Gym Roof	Tar on Concrete Deck	NAD
6	Gym Roof	Paper to Foam Insulation	NAD
7	Gym Roof	Fabric Barrier	NAD

Bold = Positive for ACM NAD = No Asbestos Detected

B. PCB-CONTAINING MATERIAL

The PCB Inspection involved a thorough visual examination of all areas that may be impacted by the proposed renovations. The following suspect materials were tested for PCB content:

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
B	Pool Building	Interior Vertical Expansion Joint Caulking at Brick Curtain Walls	ND
C	Pool Building	Exterior metal Wall Panel Glazing (type 1)	ND
D	Pool Building	Exterior metal Wall Panel Glazing (type 2)	ND

HOMOGENOUS MATERIAL	LOCATION	MATERIAL	PCB CONTENT (PPM)
E	Pool Building	Exterior Metal Wall Panel Frame Caulking	ND
F	Bldgs. A, B, C	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	
G	Gym Roof	Caulking at Metal Exhaust Vent Edges	ND
H	Gym Roof	Caulking at Flashing on Gym Mechanical Roof	ND
I	Bldg. A Gas Room Exit (NW corner of Bldg.)	Exterior Door Frame Caulking	ND

Bold = Positive for PCB ND = No PCB Detected

4.2 SAMPLE ANALYSIS TABLE

ACM laboratory analysis results are included in Appendix A.

5.0 AREAS NOT ACCESSIBLE

During the Inspection the following areas were not accessible:

- Void Spaces within Walls: No destructive sampling was performed on concealed spaces in walls to access plenum, chases etc. It should be assumed that asbestos, lead and PCB containing materials may exist in these spaces. Any suspect materials encountered during work should be sampled for analysis before work continues.

- Pool Ceiling

6.0 CONCLUSIONS AND RECOMMENDATIONS

ACM materials have been identified in this inspection that may be impacted as part of the renovations at the White Plains High School. These materials, reported in Section 3.0 of this report, may require complete removal prior to the start of the renovation project. No PCBs were identified during this Inspection.

The ACM & PCB Inspection was conducted at the request of White Plains City School District for the proposed renovations, as provided by email from H2M Senior Project Architect. Any change in the scope of work will require further investigation to accurately classify any additional ACM or PCBs resulting from the modified or updated scope of work.

7.0 REPORT CERTIFICATIONS

This report, and the supporting data, findings, conclusions, opinions, and recommendations it contains represent the result of LBG's efforts for the environmental inspection work for the White Plains High School.

Opinions and recommendations presented in this report apply to site conditions and features as they existed at the time of LBG's site visits, and those reasonably foreseeable. They cannot necessarily apply to conditions and features of which LBG is unaware and has not had the opportunity to evaluate.

The conclusions presented in this report are professional opinions solely upon LBG's visual observations of accessible areas, laboratory test data, and current regulatory requirements. These conclusions are intended exclusively for the purpose stated herein and the site indicated for the project indicated.

Prepared by:

Michael Gelfand
NYS DOL Inspector

Reviewed by:

Craig Napolitano, CHMM
Director, Industrial
Hygiene & Hazmat Services

APPENDIX A:
ASBESTOS SAMPLE ANALYSIS RESULTS IN TABULAR FORM

APPENDIX A
SAMPLE ANALYSIS RESULTS IN TABULAR FORM
WHITE PLAINS HIGH SCHOOL
550 NORTH STREET
WHITE PLAINS, NY 10605

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
A	1	Auditorium, by Entrance	Baseboard Glue (brown)	NAD	NAD
A	2	Auditorium, by Stage	Baseboard Glue (brown)	NAD	NAD
B	3	Auditorium, by Entrance	Baseboard Molding (brown)	NAD	NAD
B	4	Auditorium, by Stage	Baseboard Molding (brown)	NAD	NAD
C	5	Auditorium, by Entrance	Mastic assoc. with 9”x9” Floor Tiles (black)	NAD	NAD
C	6	Auditorium, middle	Mastic assoc. with 9”x9” Floor Tiles (black)	<1% Chrysotile	<1% Chrysotile
D	**7**	**Auditorium, by Entrance**	**9”x9” Beige Floor Tiles**	**2.4% Chrysotile**	**NA/PS**
D	**8**	**Auditorium, middle**	**9”x9” Beige Floor Tiles**	**NA/PS**	**NA/PS**
E	9	Pool Connection Corridor, south	2’x4’ Ceiling Tiles (grey)	NAD	NAD
E	10	Pool Connection Corridor, north	2’x4’ Ceiling Tiles (grey)	NAD	NAD
F	11	Pool Connection Corridor, south	Baseboard Glue (brown)	NAD	NAD
F	12	Pool Connection Corridor, north	Baseboard Glue (brown)	NAD	NAD
G	13	Pool Connection Corridor, south	Baseboard (brown)	NAD	NAD
G	14	Pool Connection Corridor, north	Baseboard (brown)	NAD	NAD
H	15	Pool Bldg., south	Wall Ceramic Tile Grout (white)	NAD	N/A
H	16	Pool Bldg., north	Wall Ceramic Tile Grout (white)	NAD	N/A
I	17	Pool Bldg., south	Floor Ceramic Tile Grout (brown)	NAD	N/A

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
I	18	Pool Bldg., north	Floor Ceramic Tile Grout (brown)	NAD	N/A
J	19	Pool Bldg., Entrance Wall	Glazing at Entrance Aluminum Framing/Panels (white)	NAD	NAD
J	20	Pool Bldg., Entrance Wall	Glazing at Entrance Aluminum Framing/Panels (white)	NAD	NAD
K	21	Pool Bldg., north	Interior Brick Mortar (grey)	NAD	N/A
K	22	Pool Bldg., south	Interior Brick Mortar (grey)	NAD	N/A
L	**23**	**Pool Bldg., SW corner**	**Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**1.4% Chrysotile**	**NA/PS**
L	**24**	**Pool Bldg., NW corner**	**Vertical Expansion Joint Caulking at Brick Curtain Walls (grey)**	**NA/PS**	**NA/PS**
M	25	Pool Bldg. West Wall, NW side	Exterior metal Wall Panel Glazing (type 1) (grey)	NAD	NAD
M	26	Pool Bldg. West Wall, SW side	Exterior metal Wall Panel Glazing (type 1) (grey)	NAD	NAD
N	**27**	**Pool Bldg. West Wall, NW side**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**1.2% Chrysotile**	**NA/PS**
N	**28**	**Pool Bldg. West Wall, SW side**	**Exterior metal Wall Panel Glazing (type 2) (light grey)**	**NA/PS**	**NA/PS**
O	**29**	**Pool Bldg. West Wall, NW side**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**1.2% Chrysotile**	**NA/PS**
O	**30**	**Pool Bldg. West Wall, SW side**	**Exterior Metal Wall Panel Frame Caulking (grey)**	**NA/PS**	**NA/PS**
P	31	Auditorium, SE side	Cinderblock Mortar (grey)	NAD	N/A
P	32	Auditorium, SW side	Cinderblock Mortar (grey)	NAD	N/A
Q	33	Bldg A 1st Floor - Rm. A122	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
Q	34	Bldg. C 1st Floor – Rm. C145	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
R	35	Bldg A 1st Floor - Rm. A122	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD

Bold = Positive for ACM
NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
R	36	Bldg. C 1st Floor – Rm. C145	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
S	37	Bldg A 2nd Floor - Rm. A221	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
S	38	Bldg. B 2nd Floor – Rm. B212	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
T	39	Bldg A 2nd Floor - Rm. A221	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
T	40	Bldg. B 2nd Floor – Rm. B212	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
U	41	Bldg. A 1st Floor – Hallway at Rm. A122	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
U	42	Bldg. C 1st Floor – Hallway at Rm. C145	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
V	43	Bldg. A 1st Floor – Hallway at Rm. A122	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
V	44	Bldg. C 1st Floor – Hallway at Rm. C145	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
W	45	Bldg A 2nd Floor – Hallway at Rm. A221	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
W	46	Bldg. B 2nd Floor – Hallway at Rm. B212	1'x1' Pinhole Ceiling Tiles (white)	NAD	NAD
X	47	Bldg A 2nd Floor – Hallway at Rm. A221	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
X	48	Bldg. B 2nd Floor – Hallway at Rm. B212	Mastic assoc. with 1'x1' Pinhole Ceiling Tiles (brown)	NAD	NAD
Y	49	Bldg A 1st Floor - Rm. A122	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD	NAD
Y	50	Bldg. C 1st Floor – Rm. C145	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	NAD	<1% Chrysotile
Z	51	Bldg A 2nd Floor - Rm. A221	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	<1% Chrysotile	<1% Chrysotile
Z	52	Bldg. B 2nd Floor – Rm. B212	Glazing at Clerestory Glass Panels bet. Rooms and Hallways (grey)	<1% Chrysotile	<1% Chrysotile

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NAD = No Asbestos Detected
N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
A1	53	Bldg. A 1st Floor – Hallway at Rm. A125	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD	N/A
A1	54	Bldg. A 1st Floor – Hallway at Rm. A101	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD	N/A
A1	55	Bldg. A 1st Floor – Boiler Room A013	Fittings Insulation assoc. with Fiberglass Pipe Insulation (grey)	NAD	N/A
B1	56	Bldg. A 1st Floor – Hallway at Rm. A125	Wrap around Fiberglass Pipe Insulation (brown)	NAD	N/A
B1	57	Bldg. A 1st Floor – Hallway at Rm. A101	Wrap around Fiberglass Pipe Insulation (brown)	NAD	N/A
B1	58	Bldg. A 1st Floor – Boiler Room A013	Wrap around Fiberglass Pipe Insulation (brown)	NAD	N/A
C1	59	Bldg A, 1st Floor Stair AS2	Cinderblock Mortar (grey)	NAD	N/A
C1	60	Bldg. C, 1st Floor Stair C31	Cinderblock Mortar (grey)	NAD	N/A
D1	61	Bldg. C 1st Floor Hallway	Sheetrock Walls (white)	NAD	N/A
D1	62	Bldg. C 1st Floor Hallway	Sheetrock Walls (white)	NAD	N/A
E1	63	Bldg. C 1st Floor Hallway	Joint Compound assoc. with Sheetrock Walls (white)	NAD	N/A
E1	64	Bldg. C 1st Floor Hallway	Joint Compound assoc. with Sheetrock Walls (white)	NAD	N/A
F1	65	Gyms Bldg. – South Gym	Cinderblock Wall Mortar (grey)	NAD	N/A
F1	66	Gyms Bldg. – North Gym	Cinderblock Wall Mortar (grey)	NAD	N/A
G1	67	South Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD	NAD
G1	68	North Gym Roof	Caulking at Metal Exhaust Vent Edges (grey)	NAD	NAD
H1	**69**	**Gym Roof – East side**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**1.2% Chrysotile**	**NA/PS**

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N/A = Not Applicable
NA/PS = Not analyzed/ positive sample

Homogeneous Area No.	Sample No.	Location	Material	PLM Result	TEM Result
H1	**70**	**Gym Roof – West side**	**Caulking at Flashing on Gym Mechanical Roof (black)**	**NA/PS**	**NA/PS**
I1	**71**	**Bldg A Gas Room Exit, NW corner**	**Exterior Door Frame Caulking (grey)**	**1.2% Chrysotile**	**NA/PS**
I1	**72**	**Bldg A Gas Room Exit, NW corner**	**Exterior Door Frame Caulking (grey)**	**NA/PS**	**NA/PS**
1	1A	Gym Mechanical Room Roof	Roof Decking	NAD	N/A
1	1B	Gym Mechanical Room Roof	Roof Decking	NAD	N/A
2	2A	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD	N/A
2	2B	Gym Mechanical Room Roof	Paper to Foam Insulation	NAD	N/A
3	3A	Gym Mechanical Room Roof	Fiberboard Insulation	NAD	N/A
3	3B	Gym Mechanical Room Roof	Fiberboard Insulation	NAD	N/A
4	4A	Gym Mechanical Room Roof	Fabric Barrier	NAD	N/A
4	4B	Gym Mechanical Room Roof	Fabric Barrier	NAD	N/A
5	5A	Main Gym Roof	Tar on Concrete Deck	NAD	NAD
5	5B	Lower Gym Roof	Tar on Concrete Deck	NAD	NAD
6	6A	Main Gym Roof	Paper to Foam Insulation	NAD	N/A
6	6B	Lower Gym Roof	Paper to Foam Insulation	NAD	N/A
7	7A	Main Gym Roof	Fabric Barrier	NAD	N/A
7	7B	Lower Gym Roof	Fabric Barrier	NAD	N/A

Bold = Positive for ACM
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NA/PS = Not analyzed/ positive sample

C. Verify items provided by other sections of Work are properly sized and located.

D. Verify that rough openings for piping are as required.

3.02 INSTALLATION

A. Form bottom of excavation clean and smooth to the correct elevation.

B. Place base pad, secure and level, to the proper elevation. Utilize a placement method which will not damage or crack the manhole.

C. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.

D. Cut and fit for pipe. Seal openings in shaft wall around pipe with brick and mortar. Establish elevations and pipe inverts for inlets and outlets as indicated on the plans. Trowel surfaces smooth.

E. Place concrete in base of manhole as required to form invert to the dimensions indicated on the plans. Trowel smooth.

F. Mount castings in a 1 inch mortar bed over access opening. Install firm, level and to the required elevation.

G. If required to achieve proper elevation of casting, adjust with brick and mortar.

3.03 TOLERANCES

A. Maximum Variation from Proposed Rim Elevation: 1/4 inch.

B. Maximum Variation from Proposed Location: 1/2 inch.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

B. Request inspection prior to backfilling around structure and prior to surface restoration.

3.05 PROTECTION

A. Protect finished work under provisions of Section 015000.

B. Protect manhole from damage or displacement until project is accepted by the Owner.

END OF SECTION 334913.13

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR STORMWATER CONSTRUCTION PERMIT

WHITE PLAINS CITY SCHOOL DISTRICT HIGH SCHOOL ADDITION

City of White Plains
White Plains, New York

H2M Project No.
WPSD2203

April 2025

Prepared for:

White Plains City School District
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White Plains, New York 10605

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
FOR STORMWATER CONSTRUCTION PERMIT

White Plains City School District
High School Addition
City of White Plains
Westchester County, New York

1. EROSION AND SEDIMENT CONTROL

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the specifications put forth in the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001). Erosion and sediment control practices are designed in conformance with the New York State Standards and Specifications for Erosion and Sediment Control.

A. PROJECT DESCRIPTION AND SCOPE

The White Plains High School is a site development project located north of North Street, within the county of Westchester in the city of, White Plains, NY (see location map in Appendix A). The project site is 140.18 acres in area. The proposed area of disturbance encompasses approximately 1.8 acres of the site.

The project scope includes a 45,000-sf two-story building addition with a pedestrian bridge and all appurtenant grading and drainage, storm and sanitary requirements, retaining walls, new concrete sidewalk walkways, drop-off area, and other associated infrastructure as shown on the detailed construction drawings included as Appendix G.

The primary potential source of pollution from construction activity associated with this project is sediment resulting from soil disturbance and stormwater runoff. Fuel from equipment used during construction activities and/or stored on-site is another potential source of pollution from this project.

Endangered or Threatened Species: The project site is not in the vicinity of Rare Animals and/or Rare Plants according to the NYSDEC Environmental Resource Mapper. Map information developed using the NYSDEC Environmental Resources Mapper is included in Appendix A.

Wetlands and Surface Waters: According to the NYSDEC Environmental Resources Mapper and the US Fish and Wildlife Service National Wetlands Inventory mapper, there are no wetlands or surface waters on or within 100 feet of the project site.

A Freshwater Wetland Checkzone is located approximately 567.4 feet south of the project site. The freshwater wetland is located on the Ridgeway Country Club property and is separated from the project site by North Street and industrial property. In no case will the project involve soil disturbance within 100 feet of a State regulated wetland. Maps developed using the NYSDEC Environmental Resources Mapper and US Fish and Wildlife Service National Wetlands Inventory mapper are included in Appendix A.

Historic Places: According to NYS Historic Preservation Office Cultural Resource Information System (CRIS), there are no eligible historic sites located within 100 feet of the proposed construction site. Map information developed using the NYS Historic Preservation Office CRIS mapper is included in Appendix A.

Floodplain/Floodway: According to FEMA FIRM Panel No. 36119C0288F, dated 9/28/2007, the project site is not located within a mapped floodplain or floodway. A FIRMette obtained from the FEMA Flood Map Service Center is included in Appendix A.

B. SOILS

According to the Soil Survey of Westchester County, New York (USDA-NRCS, Web Soil Survey), the soils found at the project site are comprised of PnB (Paxton fine sandy loam, 3 to 8 percent slopes), Uf (urban land). These soils belong to Hydrologic Soil Group C. Additionally, the site is comprised of soil type, UpB (Urban land-Paxton complex, 3 to 8 percent slopes), belonging to Hydrologic Soil Group D. A soils report for this site is included in Appendix B of this report.

C. CONSTRUCTION SCHEDULE

The following general construction schedule provides the anticipated sequence of the proposed construction activities that may result in soil disturbance. Stabilization of disturbed areas shall be performed as the project progresses in order to minimize the potential for contamination of stormwater runoff.

Sequence of Construction

1) Installation of silt fencing, inlet protection, and stabilized construction entrance located as shown on the Erosion & Sediment Control Plan;
2) Clearing and grubbing of the project site areas indicated for development and removal of existing site features as necessary for the installation of the proposed improvements;
3) Rough grading of the site;
4) Installation of the new drainage structures, frames & grates, field inlets, and the associated drainage piping. Immediately install inlet protection on all new catch basins and manholes with grates.
5) Installation of site utilities and facilities including new water and sewer connections, and electrical site work;
6) Construction of new school building addition and connection to existing;
7) Final grading of disturbed areas to finished grade.
8) Installation of new aggregate base course in areas of new pavement. Installation of new concrete curb, concrete sidewalk, asphalt access road and concrete pads;
9) Installation of new concrete and asphalt pavements.
10) Installation of new plant material.
11) Seeding of disturbed areas and other final landscaping measures.
12) Following final stabilization of disturbed areas, removal of remaining temporary erosion and sediment controls.
13) Silt removal and cleaning of inlets protected during construction.

D. TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL PRACTICES

Temporary and permanent erosion and sediment control measures shall be installed and maintained by the general contractor (or subcontractor) in accordance with the engineering plans and details, and the New York State Standards and Specifications for Erosion and Sediment Control (NYS Soil and Water Conservation Committee, 2016). Descriptions for these measures are identified in the engineering plans and details in Appendix G.

E. MAINTENANCE AND INSPECTION

Installation and maintenance of all temporary and permanent erosion and sediment control measures will be the responsibility of the general contractor. The general contractor shall ensure that a copy of the approved SWPPP is present on-site and that all sub-contractors are aware of the terms of the approved SWPPP and have signed the proper Certification Form.

The contractor shall have a trained contractor (as defined by GP-0-20-001) inspect the erosion and sediment control practices and pollution prevention measures within the active work area daily to ensure that they are being maintained in effective operating conditions at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame. The trained contractor may stop conducting the maintenance inspections in accordance with the provisions of Part IV.B of GP-0-20-001.

A qualified inspector shall conduct regular site inspections of all erosion and sediment control practices and pollution prevention measures, post construction stormwater management practices, areas of disturbance, points of discharge to surface waters within or immediately adjacent to the construction site, and points of discharge from the construction site. Specifically, the qualified inspector shall inspect all sediment barriers, inlet protection, silt fencing and construction entrances; catch basins and field inlets for accumulation of sediments; any un-stabilized, disturbed areas, mulch, and permanent vegetative controls; and staging areas and storage areas for construction materials, waste materials, and construction chemicals. The inspector shall notify the general contractor of any necessary repairs to damaged or ineffective measures, and any necessary corrective action, including, but not limited to the removal of sediment, stabilization of disturbed areas, or placement of additional measures to ensure proper functioning of the erosion and sediment control practices. The general contractor shall be responsible for immediate implementation of the corrective actions. The inspections shall be conducted at least once every seven days. For construction sites that disturb greater than five (5) acres of soil at any one time, the inspections shall be conducted at least twice every seven days with the two inspections separated by a minimum of two days. The qualified inspector may reduce the frequency of or stop conducting the inspections in accordance with the provisions of Part IV.C.3 of GP-0-15-002. The qualified inspector shall prepare an inspection report for each inspection. An example SWPPP inspection form is provided in Appendix C. All inspection reports shall be maintained on site with the SWPPP.

F. SOLID WASTE MANAGEMENT

Construction debris and waste expected to be generated during the project include concrete compounds, wood, cardboard, metals, masonry, PVC, packing material, and domestic waste (*i.e.* beverage containers, coffee cups, plastic bags and wrappers, etc.). Temporary waste containers (*i.e.* roll-off containers) of sufficient size and number shall be placed within the equipment/material storage areas, to be determined by the general contractor, and accessible on the project site in order to facilitate disposal of construction debris. Waste containers shall have lids or shall be

covered during periods of rain to prevent accumulation of water within the containers and to prevent loss of debris from wind. Waste containers shall have watertight bottoms. Waste containers shall not be cleaned or hosed out on the project site. Solid waste containers shall be removed bi-weekly or more frequently as needed. No on-site disposal of any construction materials shall be permitted.

Work areas shall be maintained in an orderly and clean manner to prevent windblown litter from exiting the site. Littering on the project site shall be prohibited. Trash receptacles shall be placed in locations where workers congregate for lunches and breaks. Litter shall be bagged before placement in large waste containers.

Potential toxic and hazardous materials, if any, shall not be disposed of in solid waste containers and shall be segregated in separate containers for transport to an approved off-site receiving area.

G. CHEMICAL STORAGE AND SPILL PREVENTION/RESPONSE

The general contractor is responsible for proper storage of potentially hazardous chemicals on-site and enforcement of proper spill prevention and control measures. Proper storage, clean-up, and spill reporting instructions will be present in the project trailer and will be posted in a conspicuous and accessible location.

Potentially hazardous chemicals and materials that may be used on site include solvents, adhesives, lubricants, gasoline, diesel fuel, asphalt and concrete compounds. All chemicals shall be stored in their original containers, and according to manufacturer's specifications. Materials shall be stored in covered storage with an impervious lined bottom to prevent leaching of chemicals into the ground. The storage shall be secured to prevent unauthorized entry during non-working hours. An ample supply of appropriate absorbent spill clean-up material will be kept in or near the storage area. The storage area is to be kept clean and well-organized.

In the event of a chemical spill, the contractor should contain the spill in accordance with the manufacture's recommended methods and must report the spill to the NYS Spill Hotline (1-800-457-7362) within 2 hours of discovery.

H. STORMWATER DISCHARGES FROM INDUSTRIAL ACTIVITY

There are no stormwater discharges associated with industrial activity at the construction site (i.e. asphalt plants and/or concrete plants) proposed as part of this project.

2. POST-CONSTRUCTION STORMWATER MANAGEMENT

The post-construction stormwater management practices for this project have been designed in conformance with applicable sizing criteria of the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) and the performance criteria of the technical standards of the NYS Stormwater Management Design Manual.

A. STORMWATER MANAGEMENT PRACTICES

Clearing limits are identified on the construction drawings in order to establish areas of natural features to be preserved and protected while the remainder of the site is being developed. The preservation of natural areas associated with this project also serves to limit the amount of impervious surfaces on the site.

Soil restoration practices in accordance with Table 5.3 of the NYS Stormwater Management Design Manual will be applied across areas of soil disturbance to be vegetated under post-development conditions in order to recover the original properties and porosity of the soil. All soils at this site belong to Hydrologic Soil Group C or D.

The primary post-construction SMPs incorporated into the design for this site are sized to provide runoff reduction capacity for 100% of the WQv, channel protection volume, overbank flood control criteria and extreme flood control criteria required by GP-0-20-001 and the NYS Stormwater Management Design Manual.

Construction drawings indicating the quantity, dimensions, material specifications, and installation details for the proposed SMP's are provided in Appendix G.

B. STORMWATER MODELING AND ANALYSIS

Pre-Development Conditions

A Pre-Development Drainage Area Map is provided in Appendix G identifying watershed boundaries, flow paths and design points. In the existing condition, the project site primarily developed with a two-story building, concrete sidewalks and grass areas. The site generally slopes south and north with grades ranging from 2% to 25%. For comparative analysis the site has been separated into two sub-watersheds and corresponding points of analysis; Study Point 1, runoff tying into the parking lot drainage to the northeast of the site, and Study Point 2 the catch basin to the northwest of the site tying into the North Street drainage system. These areas have

contributory flows from two watersheds (WS#1 and WS#2). WS#1 contains a small potion of the site area to be developed which drains to Study Point 1. This area is generally flat and is developed with asphalt pavement for access and parking, concrete curb and sidewalk, and some grass areas. WS#2, tying into Study Point 2, contains the majority of the site and is developed with the building, a small shed, grassed areas and paved surfaces.

Post-Development Conditions

A Post-Development Drainage Area Map is provided in Appendix G identifying watershed boundaries, flow paths, design points and SMP's. In the post-development condition, the project site will be developed with approximately 0.4 acres of new impervious surfaces. These new areas can be contributed to the new building, site access road and paved sidewalk areas. The post developed site is broken into three watershed areas: WS#1, WS#2A and WS#2B.

Similar to the pre-development conditions, WS#1 generally slopes from south to northeast and ties into Study Point No. 1. The area is developed with a new concrete sidewalk and curb, asphalt parking and access aisle and a small, landscaped area. WS#2A is developed with a new 45,000-sf addition, concrete sidewalk and curbing and grass swales to the east and west of the building. A paved access with parking and a passenger drop off area have also been added to improve traffic circulation around the site. Runoff from WS#2A is collected in swales and new drainage structures and ties into an underground infiltration system to the north of the site. WS#2B contains all areas of WS#2 which do not tie into the underground storage system. There areas include the parkin lot areas to the north and west of the proposed improvements and a grass area to the north of the site. Runoff from both WS#2A and WS#2B collect and tie into the stormwater drainage system along the northwest of the site (Study Point No. 2).

Stormwater Modeling

Stormwater runoff from watershed areas in the pre and post-development conditions and the post-construction stormwater management practices have been modeled for the 1, 10 and 100-year, 24-hour storm events using the Hydraflow Hydrographs software. Time of Concentration (Tc) values for pre and post-development conditions were determined using the TR-55 methodology. A minimum Tc value of 6 minutes was used for each tributary area. Runoff rates have been calculated using the SCS Unit Hydrograph method.

In Hydraflow Hydrographs the underground infiltration systems are modeled as ponding volumes with an average rate of infiltration. For the purposes of modeling the SMPs, an infiltration rate of

2 inches per hour was used for the proposed drywell systems. It should be noted that infiltration testing in the area of the practice yielded a rate of 6 inches per hour. As a result, the modeling analysis performed is conservative. As modeled, stormwater runoff in excess of the storage and infiltration capacities of underground infiltration system is reported in the Hydraflow Hydrographs output as a peak overflow rate. Post-development peak runoff and overflow rates for watershed areas draining to the same design point are summed for the purpose of comparison with pre-development conditions.

TR-55 worksheets calculating Tc values for each watershed are provided in Appendix F along with Hydraflow Hydrographs stormwater modeling analysis reports. A summary comparing pre and post-development runoff rates and volumes for the different storm events is provided in Table 01 below.

Table 01 – Stormwater Modeling Summary

Study Point	Watershed ID	Runoff Volume (cf)			Peak Runoff/SMP Overflow Rate (cfs)		
		1-Yr	10-Yr	100-Yr	1-Yr	10-Yr	100-Yr
	Pre-Development Condition						
1	WS#1	2,326	4,805	8,732	0.75	1.48	2.60
2	WS#2	17,044	38,745	74,075	4.44	9.84	18.17
	Post-Development Condition						
1	WS#1	2,209	4,393	7,827	0.69	1.32	2.29
	Total	**2,209**	**4,393**	**7,827**	**0.69**	**1.32**	**2.29**
2	WS#2A	9,472	21,118	39,959	2.46	5.33	9.74
	WS#2B	8,696	19,018	35,618	2.52	5.32	9.62
	Total	**10,235**	**29,670**	**62,736**	**2.52**	**8.45**	**17.98**

SMP Sizing Criteria

Post-construction SMPs have been designed in conformance with the sizing criteria included in the NYS Stormwater Management Design Manual. Specifically post-construction SMPs have been designed to achieve the Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), Overbank Flood (Qp), and Extreme Storm (Qf) sizing requirements of the Design Manual.

1) Water Quality Volume (WQv) & Runoff Reduction Volume (RRv)

In accordance with Section 4.2 of the Design Manual, the WQv is defined as the volume of runoff generated from the 90th percentile rain event, which, for this site, equates to a 1.5 inch rainfall event. The WQv is calculated as follows:

$$WQv = \frac{[(P)(Rv)(A)]}{12}$$

Where:

P = 90% Rainfall Event Number (1.5 inches)

R_v = 0.05 + 0.009 (I), where I is percent impervious cover

A = site area in acres (Contributing area)

A summary of the required WQv for each post-development watershed along with the volume provided by the associated SMP can be found in Table 02 below.

Table 02 – WQv Summary

Watershed ID	Watershed Area 'A' (ac)	Impervious Area (ac)	Percent Impervious (%)	Rv	WQv Required (ft^3)	Volume Provided (ft^3)
WS Area	1.72	0.59	34	0.36	3,359	3,396

As indicated in Table 02 above, the SMP's proposed will reduce 100% of the WQv for the post-development condition, and the RRv objectives of the Design Manual will be satisfied. This is achieved by the use of the underground infiltration system. The chambers will collect and store 3,396 ft^3 of runoff volume which will be infiltrated. This is demonstrated in the Hydraflow Hydrographs calculations.

Additional SMP sizing information can be found on the Worksheets located in Appendix E.

2) Channel Protection Volume (CPv)

In accordance with Chapter 4 of the NYS Stormwater Management Design Manual, the proposed SMPs shall meet the CPv sizing criteria, which is the 24-hour extended detention of the post-development 1-year, 24-hour storm event, which, for this site, equates to a 2.85 inch rainfall event according to Figure 4.2 of the Design Manual.

The CPv the developed watershed area has been computed using as previously described in this report. For the purposes of modeling, a conservative value of 2 inches per hour was used. However, using the reported value of 6 inches per hour, the stormwater modeling indicates that the entirety of the 1-year storm event would be reduced and therefore the CPv will be met.

3) Overbank Flood Control (Qp)

In accordance with Chapter 4 of the NYS Stormwater Management Design Manual, the proposed SMPs shall meet the Qp sizing criteria, which requires control of post-development peak discharges for the 10-year, 24-hour storm event to pre-development rates. According to Figure 4.3 of the Design Manual, the 10-year storm event has a rainfall depth of 5.25 inches at this site.

Pre and post-development watershed areas have been modeled using Hyrdaflow Hydrographs for the 10-year storm for each design point of analysis. A summary comparing pre and post-development runoff peak rates at each design point for the 10-year, 24-hour storm event can be found in Table 01 above. As indicated in Table 01, the calculated post-development peak flow rates do not exceed the pre-development rates at any design point. Therefore, the Overbank Flood protection objectives required in the Design Manual are considered to be satisfied for this project.

4) Extreme Flood Control (Qf)

In accordance with Chapter 4 of the NYS Stormwater Management Design Manual, the proposed SMPs shall meet the Qf sizing criteria, which requires control of post-development peak discharges for the 100-year, 24-hour storm event to pre-development rates. According to Figure 4.4 of the Design Manual, the 100-year storm event has a rainfall depth of 9.0 inches at this site.

Again, pre and post-development watershed areas have been modeled using Hyrdaflow Hydrographs for the 100-year storm for each design point of analysis. A summary comparing pre and post-development runoff peak rates at each design point for the 100-year, 24-hour storm event is can be found in Table 01 above. As indicated in Table 01, the calculated post-development peak flow rates do not exceed the pre-development rates at any design point. Therefore, the Extreme Flood protection objectives required in the Design Manual are considered to be satisfied for this project.

C. SOIL TESTING RESULTS AND LOCATIONS

Test boring locations and the reported boring log information from soil testing performed as well as infiltration testing results for this site are provided in the Geotechnical Report prepared by Whitestone Associates, dated November 2, 2022 in Appendix B.

D. OPERATIONS AND MAINTENANCE PLAN

Upon completion of construction, the Owner will be responsible for inspection, maintenance, and repair of the post-construction SMPs. The stormwater management practices shall be inspected at least twice annually. Debris, trash, sediment and other waste material found within the systems should be removed and disposed of at suitable disposal/recycling sites and in compliance with applicable local, state, and federal waste regulations by the entity responsible. Specific guidance is provided below for the proposed stormwater practices:

Responsible Party for Maintenance

White Plains City School District
5 Homeside Lane
White Plains, NY 10605
(914) 422-2024

Soil Restoration: Restoration in accordance with Table 5.3 of the Design Manual shall be required for the following areas of the site:

- Vegetated areas where topsoil was stripped:
  - For Soil Type 'C/D' (southeast corner of site) apply 6-inches of topsoil, aerate[1], and seed in accordance with Table 7.
- Areas of cut and fill:
  - For Soil Type 'C/D' (southeast corner of site) perform full soil restoration[2] and seed in accordance with Table 7.
- Heavy traffic areas on site:
  - Perform full soil restoration and seed in accordance with Table 7.
- Redevelopment areas of the site:
  - Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.

[1] Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler

[2] Full soil restoration shall be performed per "Deep Ripping and De-compaction, DEC 2008".

Vegetated Swale Maintenance:

- Fertilize and lime as needed to maintain dense vegetation.
- Mow as required during the growing season to maintain grass heights at 4 inches to 6 inches.
- Remove any sediment or debris buildup by hand if possible, in the bottom of the channel when the depth reaches 2 inches or 25% of WQv is exceeded.
- Inspect for pools of standing water. Regrade to restore design grade and revegetate.
- Repair rills in channel bottom with compacted topsoil, anchored with mesh or filter fabric. Seed and mulch (see Table 03 below).
- Use of heavy equipment for mowing and removing plants/debris should be avoided to minimize soil compaction. Disturbed areas should be stabilized with seed and mulch, or revetment, as necessary.
- All plantings in the wet swale to be maintained. Any dead or diseased plants are to be removed and replaced.

Vegetative Cover Maintenance:

- The site should maintain a minimum vegetative cover of 80% or greater.
- The Owner shall be responsible for ensuring that areas containing vegetative cover are maintained properly. Should there be disturbance to soils or other activities resulting in removal of vegetative cover, these areas shall be reseeded in accordance with Table 07 below:

Table 07 – Reseeding Schedule

Seed Species (% by Weight)	lbs/1.000 ft2	lbs/acre
65% Creeping red fescue	2.0-2.6	85-114
20% Perennial ryegrass	0.6-0.8	26-35
15% Fine fescue	0.4-0.6	19-26

- In order for areas to be considered restabilized or having proper cover, all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface should be well established.

Underground Storage Chambers:

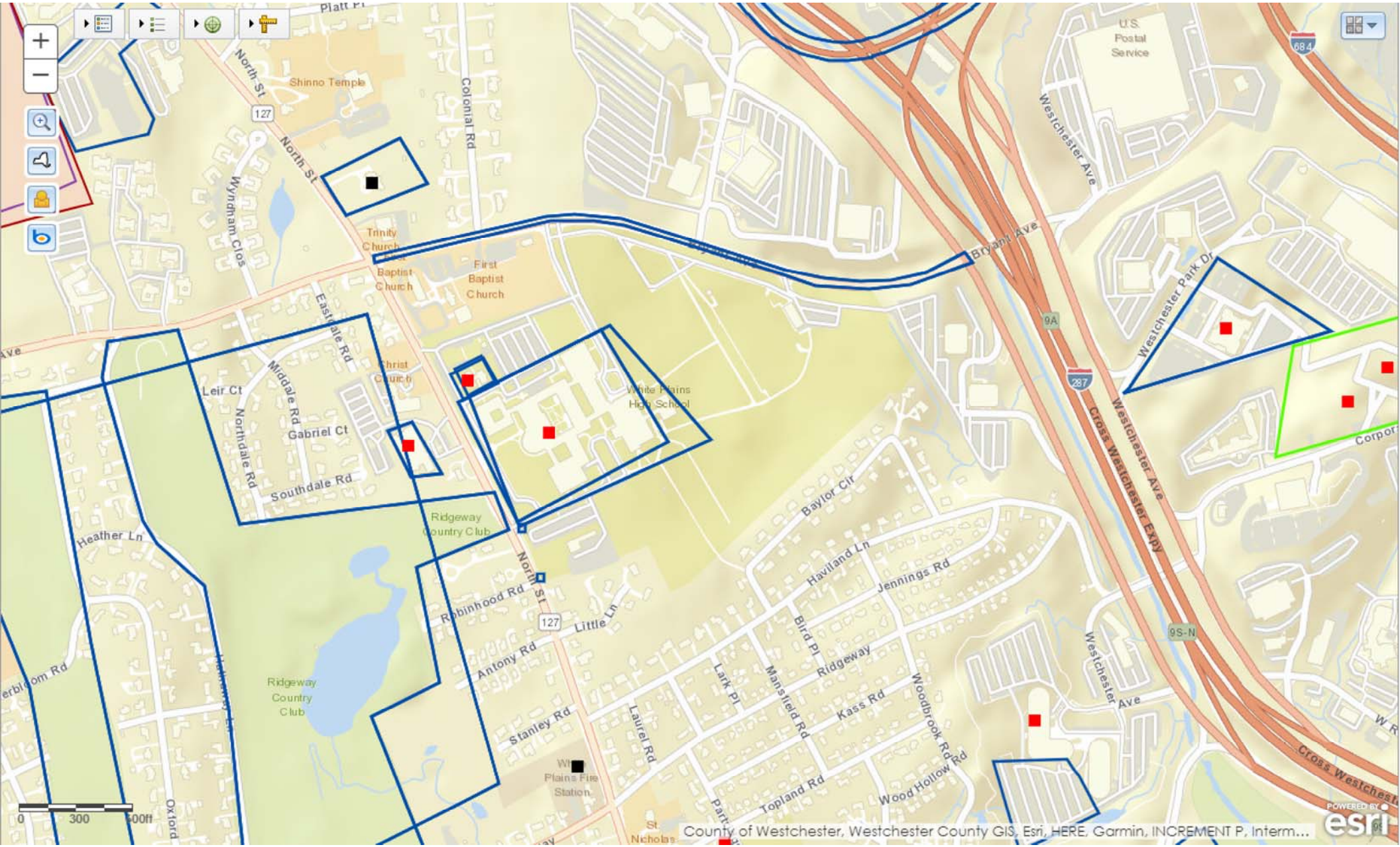
- Maintenance of the StormTech Isolator Row to occur at a minimum of twice a year when sediment accumulation is noted. The Isolator Row should be cleaned using the JetVac process and must be in accordance with the Inspection and Maintenance Section of the StormTech Design Manual.
- The drain inlets must be cleaned quarterly or after a large storm event. Cleaning must occur when sediment is at a depth of 6". All sediment should be removed from the drain inlet.
- The sump must be cleaned quarterly or after a large storm event. Cleaning must occur when sediment is at a depth of 6". All sediment should be removed from the sump via excavation, pump or vacuum.
- The Owner or person responsible for the maintenance of the underground storage chamber is responsible for understanding and following the minimum requirements of the Inspection and Maintenance section of the StormTech Design Manual.

Appendix A

Location Map
CRIS Historic Sites Map
FEMA FIRMette
US Fish and Wildlife Service Wetlands Map
NYS DEC Environmental Resources Mapper

Location Map

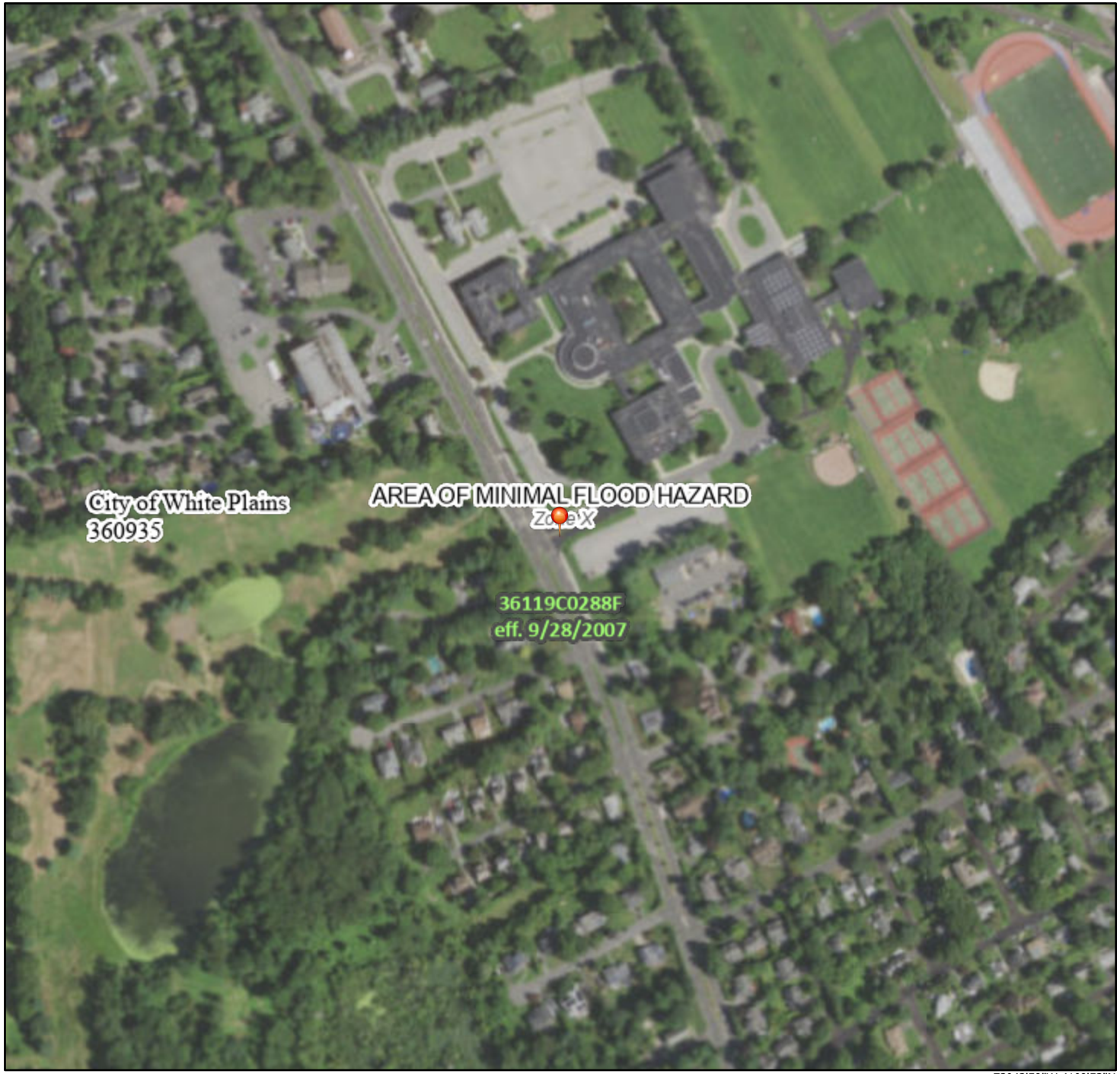
White Plains City School District
High School Addition


Platt Pl
North St
127
Shinno Temple
Colonial Rd
Wyndham Clos
North St
Trinity Church
First Baptist Church
First Baptist Church
Bryant Ave
U.S. Postal Service
Westchester Ave
684
9A
287
Westchester Park Dr
Cross Westchester Expy
Westchester Ave
Eastdale Rd
Middale Rd
Christ Church
Leir Ct
Northdale Rd
Gabriel Ct
Southdale Rd
White Plains High School
Heather Ln
Ridgeway Country Club
Robinhood Rd
North St
127
Little Ln
Antony Rd
Stanley Rd
Laurel Rd
Baylor Cir
Haviland Ln
Jennings Rd
Bird Pl
Ridgeway
Lark Pl
Mansfield Rd
Kass Rd
Woodbrook Rd
Wood Hollow Rd
Topland Rd
Ridgeway Country Club
Westchester Ave
9S-N
Cross Westchest
Plains Fire Station
St Nicholas
0
300
600ft
County of Westchester, Westchester County GIS, Esri, HERE, Garmin, INCREMENT P, Interm...
POWERED BY esri

National Flood Hazard Layer FIRMette

FEMA

73°44'36"W 41°1'20"N



73°43'59"W 41°0'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/16/2023 at 2:42 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands Map

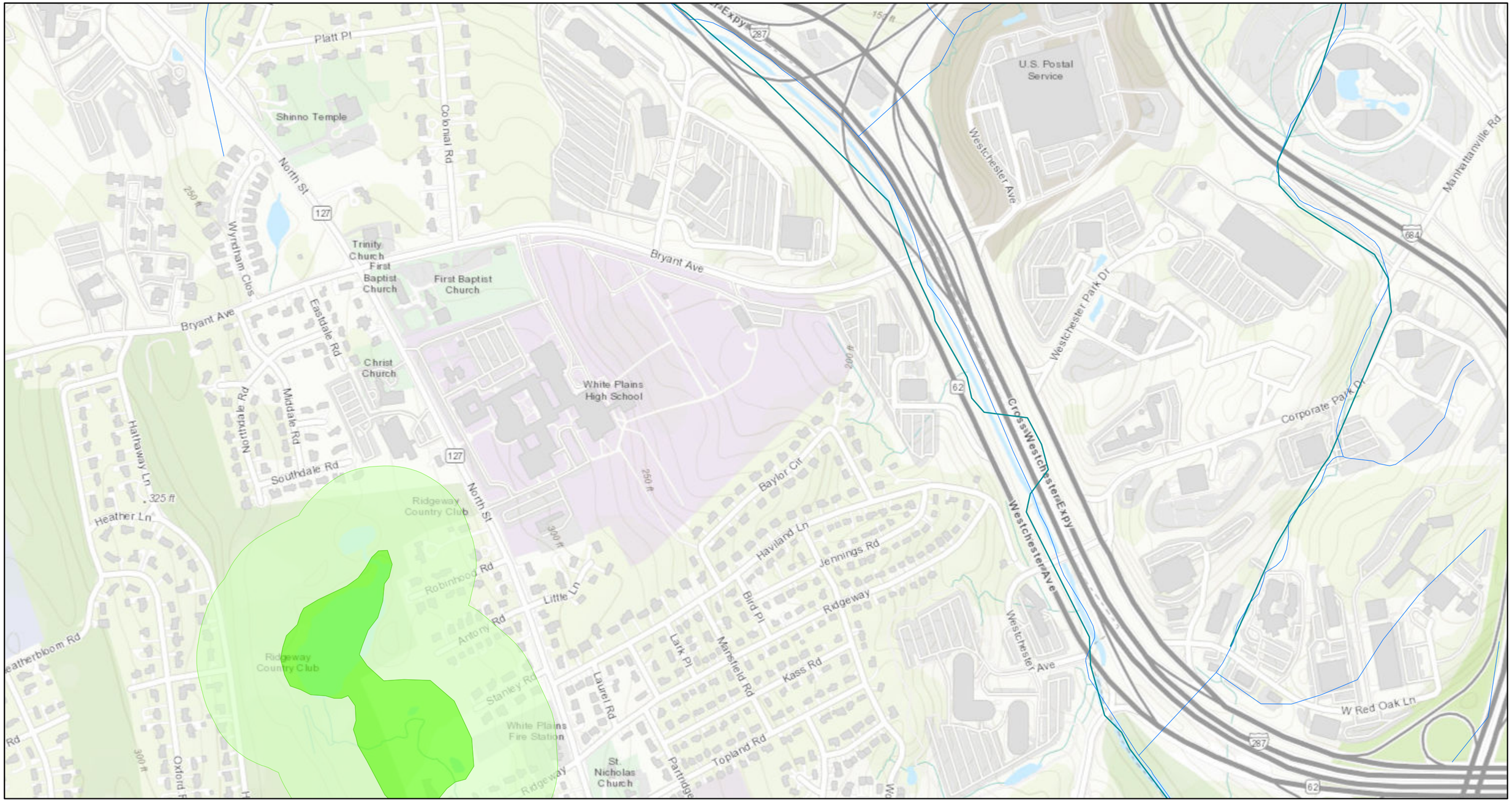
February 16, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

WPSD2203



December 12, 2023

1:9,028

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

NYS Department of Environmental Conservation
Not a legal document

Appendix B

Soil Reports

United States Department of Agriculture

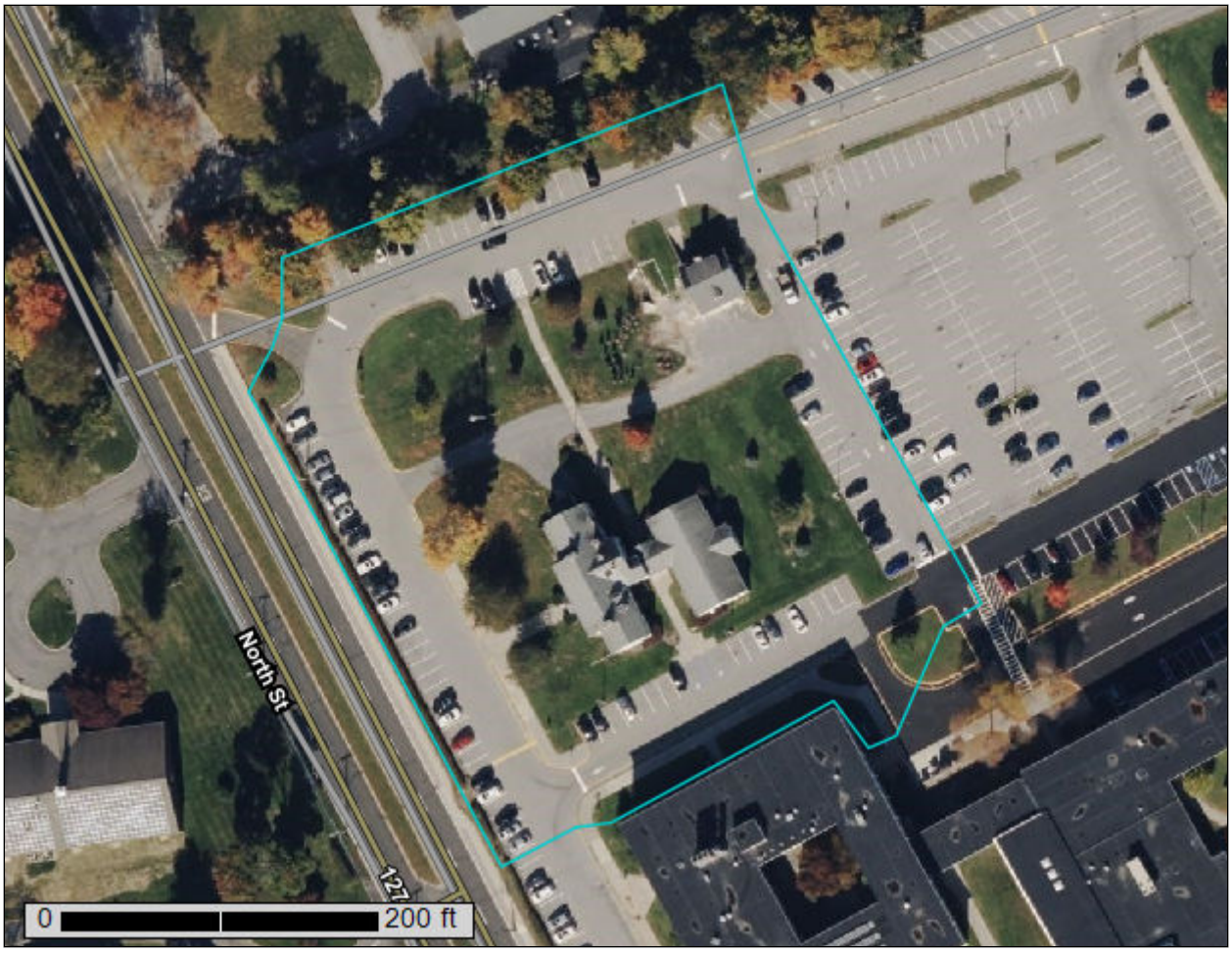
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Westchester County, New York

WPSD2203



March 28, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,090 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 18, Sep 10, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	1.3	41.6%
Uf	Urban land	0.5	14.8%
UpB	Urban land-Paxton complex, 3 to 8 percent slopes	1.3	43.7%
Totals for Area of Interest		**3.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Westchester County, New York

PnB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qp
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge
Percent of map unit: 9 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury
Percent of map unit: 6 percent
Landform: Hills, ground moraines, drainageways, depressions
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton
Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Uf—Urban land

Map Unit Setting
National map unit symbol: bd7j
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

UpB—Urban land-Paxton complex, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2w67p
Elevation: 0 to 930 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent
Paxton and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Description of Paxton

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins, drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

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WHITESTONE

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REPORT OF GEOTECHNICAL INVESTIGATION

PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 NORTH STREET
WHITE PLAINS, WESTCHESTER COUNTY, NEW YORK

Prepared for:

H2M ARCHITECTS & ENGINEERS
538 Broad Hollow Road
Fourth Floor East
Melville, New York 11747

Prepared by:

WHITESTONE
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Mudar Khantamr, P.E.
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Vice President

Whitestone Project No.: GJ2219662.Y00
November 2, 2022

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November 2, 2022

via email

H2M ARCHITECTS & ENGINEERS
538 Broad Hollow Road
Fourth Floor East
Melville, New York 11747

Attention: Cole Podolsky, LEED AP
Project Designer

Regarding: REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 NORTH STREET
WHITE PLAINS, WESTCHESTER COUNTY, NEW YORK
WHITESTONE PROJECT NO.: GJ2219662.Y00

Dear Mr. Podolsky:

Whitestone Associates Engineering & Geology NY, PLLC in conjunction with Whitestone Associates, Inc. (collectively, Whitestone) is pleased to submit the attached *Report of Geotechnical Investigation* for the above-referenced project. The attached report presents the results of Whitestone's soils exploration efforts and presents recommendations for design of the proposed structural foundations, floor slabs, pavements, and related earthwork.

Whitestone's Geotechnical Division appreciates the opportunity to be of continued service to H2M Architects & Engineers (H2M). Please note that Whitestone has the capability to conduct the additional geotechnical engineering services recommended herein.

Please contact us at (908) 668-7777 with any questions or comments regarding the enclosed report.

Sincerely,

WHITESTONE

Mudar Khantamr, P.E.
Associate

Laurence W. Keller, P.E.
Vice President

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Enclosures

REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 North Street
White Plains, Westchester County, New York

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REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 North Street
White Plains, Westchester County, New York

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FIGURES

APPENDICES

SECTION 1.0
Summary of Findings

Whitestone has conducted an exploration and evaluation of the subsurface conditions for the proposed White Plains High School improvements located at 550 North Street in White Plains, Westchester County, New York. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

At the time of Whitestone's exploration, the site housed the White Plains High School including multiple buildings, athletic fields, tennis courts, and associated pavements, landscaping, and utilities. The existing pavements were observed to be in fair to poor structural condition with multiple areas of variable cracking.

Based on the September 2022 *Soil Boring Plan* prepared by H2M, the proposed redevelopment is anticipated to include demolishing the existing building located within the northwestern portion of the site and constructing an approximately 36,000-square feet building, pavement areas, and turf athletic field with associated subsurface drainage. The proposed building is anticipated to be less than three stories in height and will not contain any below-grade levels. Detailed grading has not been finalized and the finished floor elevation of the proposed structure or pavement grades are not known at this time. However, based on existing grades, Whitestone anticipates that the proposed site will be redeveloped at or near existing grades with maximum cut/fill on the order of five feet.

The subsurface exploration included conducting a reconnaissance of the project site, drilling eight soil test borings and one pavement core, conducting in-situ infiltration testing, and collecting soil samples for laboratory analyses. The data from this exploration and analysis were analyzed by Whitestone in light of the project information provided by H2M.

A summary of Whitestone's findings is presented below in tabular format and detailed descriptions of the subsurface conditions encountered are presented in Section 4.0.

Subsurface Profile	Description	Bottom of Stratum (fbgs)
Surface Cover Material	The soil borings encountered approximately six inches of topsoil at the surface. The pavement core conducted within the existing paved area encountered approximately 3.5 inches of asphaltic concrete at the surface underlain by approximately 5.5 inches of granular subbase materials.	0.5 to 0.75
Glacial Deposits	Consisting of poorly graded sand (USCS: SP) with variable amounts of silt and clay (USCS: SM and SC), and sandy silt (USCS: ML) with variable amounts of gravel and lesser amounts of apparent cobbles/boulders.	28.4

Subsurface Profile	Description	Bottom of Stratum (fbgs)
Groundwater	Static groundwater was not encountered within the borings conducted to the deepest depth explored of approximately 28.4 fbgs. However, perched/trapper water was encountered within several soil borings at depths ranging from approximately nine fbgs to 10 fbgs. Static groundwater and perched/trapped water conditions likely will fluctuate seasonally, tidally, and following periods of precipitation.	+28.4

fbgs: feet below ground surface

Recommendations developed upon consideration of these findings are summarized in the table below and presented in greater detail in the indicated sections of the report.

Geotechnical Considerations	Recommendation	Report Section
Foundation System	Whitestone recommends supporting the proposed structure on conventional shallow foundations designed to bear within the underlying naturally occurring site soils and/or on properly placed and compacted structural fill.	5.5
Floor Slabs and Pavements	Whitestone anticipates that the underlying natural soils and/or controlled structural fill will be suitable for support of the proposed floor slabs and pavements provided these materials are properly recompacted, proofrolled, and evaluated during the construction phase.	5.6 & 5.7
On-Site Soil Reuse	Whitestone anticipates that a majority of the underlying natural materials will be suitable for selective reuse as structural fill and/or backfill throughout the site provided that moisture contents are controlled within two percent of the optimum moisture content.	5.3
Difficult Excavation Considerations	Naturally occurring cobbles/boulders were encountered during this subsurface investigation at highly variable depths ranging between approximately 4.0 fbgs and 28.4 fbgs. As such, removal of dense glacial materials in deeper excavations may be required during construction. Excavation difficulties will be more prevalent in confined excavations, such as foundations and utilities, footing and utility excavations may inadvertently become oversized due to the presence of boulders and require additional backfill materials.	5.2

SECTION 2.0
Introduction

2.1 AUTHORIZATION

Cole Podolsky, LEED AP of H2M issued authorization to Whitestone to conduct a geotechnical investigation and SWM area evaluation on this site relevant to the proposed site improvements. The geotechnical investigation was conducted in general accordance with Whitestone's October 3, 2022 proposal to H2M.

2.2 PURPOSE

The purpose of this subsurface exploration and analysis was to:

- ascertain the various soil profile components at test locations;
- estimate the engineering characteristics of the proposed foundation bearing and subgrade materials;
- provide geotechnical criteria for use by the design engineers in preparing the foundation and floor slab design;
- provide recommendations for required earthwork and subgrade preparation;
- record groundwater levels and/or bedrock levels (where encountered) at the time of the investigation and discuss the potential impact on the proposed construction; and
- recommend additional investigation and/or analysis (if warranted).

2.3 SCOPE

The scope of the exploration and analysis included the subsurface exploration; field testing and sampling; laboratory analysis; and a geotechnical engineering analysis and evaluation of the subsurface materials. This *Report of Geotechnical Investigation* is limited to addressing the site conditions related to the physical support of the proposed construction. Any references to suspicious odors, materials, or conditions are provided strictly for the client's information.

2.3.1 Field Exploration

Field exploration of the project site was conducted by means of eight soil borings (identified as B-1 through B-8) advanced with a track-mounted drill rig equipped with hollow stem augers and split-spoon sampling

techniques, one pavement core, and seven in-situ infiltration tests (identified as I-1 through I-7). The soil borings were conducted within the areas of the proposed site improvements to depths ranging from approximately four fbgs to 28.4 fbgs. The soil borings were backfilled with excavated soils generated from the investigation. The locations of the soil borings are shown on the *Test Location Plan* included as Figure 1.

The borings were conducted in the presence of a Whitestone engineer who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. The boring locations were located in the field using normal taping procedures and estimated right angles. These locations are presumed to be accurate within a few feet.

Soil borings and standard penetration tests (SPTs) were conducted in general accordance with ASTM International (ASTM) designation D-1586. The SPT resistance value (N) can be used as an indicator of the consistency of fine-grained soils and the relative density of coarse-grained soils. The N-value for various soil types can be correlated with the engineering behavior of earthworks and foundations.

Groundwater level observations, where encountered, were recorded during and at the completion of field operations prior to backfilling the borings. Seasonal variations, temperature effects, and recent rainfall conditions may influence the levels of the groundwater, and the observed levels will depend on the permeability of the soils. Groundwater elevations derived from sources other than seasonally observed groundwater monitor wells may not be representative of true groundwater levels.

2.3.2 Laboratory Program

In addition to the field investigation, a laboratory program was conducted to determine additional, pertinent engineering characteristics of representative samples of on-site soils. The laboratory program was conducted in general accordance with applicable ASTM standard test methods and included physical/textural testing of representative samples of various strata.

Physical/Textural Analysis: Representative samples of selected strata encountered were subjected to a laboratory program that included Atterberg limits determination (ASTM D-4318), moisture content determinations (ASTM D-2216), and washed gradation analyses (ASTM D-422) in order to conduct supplementary engineering soil classifications in general accordance with ASTM D-2487. The soil strata tested were classified by the Unified Soil Classification System (USCS) and results of the laboratory testing are summarized in the following table.

PHYSICAL/TEXTURAL ANALYSES SUMMARY							
Source of Sample	**Sample Number**	**Depth (fbgs)**	**Natural Moisture (%)**	**Liquid Limit (%)**	**Plastic Index (%)**	**Passing No. 200 Sieve (%)**	**USCS Classification**
B-1	S-4	6.0 - 8.0	9.8	NP	NP	33.2	SM
B-4	S-5	8.0 - 10.0	4.7	NP	NP	33.1	SM
B-8	S-3	4.0 - 6.0	6.3	27	11	44.5	SC

Notes: NP = Non-Plastic

The engineering classifications are useful when considered in conjunction with the additional site data to estimate properties of the soil types encountered and to predict the soil's behavior under construction and service loads. Laboratory test results are provided in Appendix B.

2.3.3 Infiltration Testing

Infiltration tests were conducted at the anticipated level of infiltration within the proposed SWM areas at borings B-1, B-2, and B-4 through B-8. Infiltration testing was conducted in general accordance with the *New York State Stormwater Design Manual*. The tests conducted resulted in field infiltration rates ranging from approximately less than 0.2 inches per hour (iph) to 6.7 iph. Infiltration test results are provided in Appendix C.

SECTION 3.0
Site Description

3.1 LOCATION AND DESCRIPTION

The subject site is located at 550 North Street in White Plains, Westchester County, New York. The site is bound to the north by a church and Bryant Avenue, to the east by Bryant Avenue and Westchester Avenue, to the south by residential buildings, and to the west by North Street. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

3.2 EXISTING CONDITIONS

Surface Cover/Development: At the time of Whitestone's exploration, the site housed the White Plains High School including multiple buildings, athletic fields, tennis courts, and associated pavements, landscaping, and utilities. The existing pavements were observed to be in fair to poor structural condition with multiple areas of variable cracking.

Topography: A topographic survey was not available at the time of Whitestone's investigation, however, based on visual observation, the site appeared be generally flat lying with moderate west dipping slopes within the central portion of the site and overall grade changes on the order of approximately 50 feet across the property.

Utilities: At the time of Whitestone's subsurface field investigation, the subject site was serviced by public and private utilities including aboveground and underground electric, telephone, communication, water, natural gas, sanitary and stormwater sewer lines. Other utilities were not observed at the subject site by Whitestone but may be present. The utility information contained in this report is presented for general discussion only and is not intended for construction purposes.

Site Drainage: Surface runoff generally consists of sheet flow across the existing ground surface and generally appeared to flow in an easterly direction.

3.3 SITE GEOLOGY

The area of the subject site is situated within the Manhattan Prong of the New England Uplands Physiographic Province of the Northeastern United States. The site reportedly is underlain by the Middle Ordovician to Lower Cambrian-age Hartland Formation. This formation generally consists of basal amphibolite overlain by pelitic schists. Overburden materials in the region also typically include glacial

deposits associated with Wisconsinan Glaciation that reached a most southerly advance approximately 20,000 years ago. Overlying materials also include manmade fill associated with past and present development of the site.

3.4 PROPOSED CONSTRUCTION

Based on the *Soil Boring Plan* prepared by H2M, the proposed redevelopment is anticipated to include demolishing the existing building located within the northwestern portion of the site and constructing an approximately 36,000-square feet building, pavement areas, and turf athletic field with associated subsurface drainage. The proposed building is anticipated to be less than three stories in height and will not contain any below-grade levels.

Detailed grading has not been finalized and the finished floor elevations of the proposed structure or pavement grades are not known at this time. However, based on existing grades, Whitestone anticipates that the proposed site will be redeveloped at or near existing grades with maximum cut/fill on the order of five feet.

The anticipated maximum loads for the proposed structures are expected to be as follows:

- column loads - 225 kips;
- wall loads - 3.0 kips/linear foot;
- floor slab loads - 125 pounds per square foot (psf);

Detailed structural information has not yet been provided. The above-referenced loads are based on past experience with similar facilities and should be confirmed by the project structural engineer. The scope of Whitestone's investigation and the professional advice contained in this report were generated based on the project details and loading noted herein. Any revisions or additions to the design details enumerated in this report should be brought to the attention of Whitestone for additional evaluation as warranted.

SECTION 4.0
Subsurface Conditions

4.1 SUBSURFACE SOIL CONDITIONS

Details of the subsurface materials encountered are presented on the *Records of Subsurface Exploration* presented in Appendix A of this report. The subsurface soil conditions encountered in the soil borings consisted of the following generalized strata in order of increasing depth.

Surface Cover: The subsurface tests were conducted within the existing landscaped and paved areas. The soil borings encountered approximately six inches of topsoil at the surface. The pavement core conducted within the existing paved area encountered approximately 3.5 inches of asphaltic concrete at the surface underlain by approximately 5.5 inches of granular subbase materials.

Glacial Deposits: Underlying the surface cover, the subsurface tests encountered natural glacial deposits consisting of poorly graded sand (USCS: SP) with variable amounts of silt and clay (USCS: SM and SC), and sandy silt (USCS: ML) with variable amounts of gravel and occasional apparent cobbles/boulders. The borings were terminated within the glacial deposits at depths ranging from approximately four fbgs to 28.4 fbgs. SPT N-values within coarse-grained portions of this stratum ranged between two blows per foot (bpf) and refusal (defined as greater than 50 blows per six-inch advancement of the split-spoon sampler), generally indicating very loose to very dense relative density and averaging approximately 29 bpf.

4.2 GROUNDWATER

Static groundwater was not encountered within the borings conducted to the deepest depth explored of approximately 28.4 fbgs. However, perched/trapper water was encountered within several soil borings at depths ranging from approximately nine fbgs to 10 fbgs. Static groundwater and perched/trapped water conditions likely will fluctuate seasonally and following periods of precipitation.

SECTION 5.0
Conclusions and Recommendations

5.1 GENERAL

Whitestone recommends supporting the proposed structure on conventional shallow foundations bearing on the underlying natural soils and/or properly placed structural fill that are properly inspected, placed, and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report. The proposed floor slabs and pavements also may be supported on the underlying natural soils and/or properly placed structural fill.

Machine auger and split-spoon refusal on naturally deposited cobbles/boulders was encountered during this subsurface investigation at highly variable depths. As such, removal of dense glacial materials in deeper excavations may be required during construction. Excavation difficulties will be more prevalent in confined excavations, such as foundations and utilities, footing and utility excavations may inadvertently become oversized due to the presence of boulders and require additional backfill materials.

5.2 SITE PREPARATION AND EARTHWORK

Surface Cover Stripping and Demolition: Prior to stripping operations, all utilities should be identified and secured. The existing structure and pavements to be demolished and stripped should be removed from within the limits of any areas requiring structural fill. Existing structural elements, such as foundation walls, or any concrete foundations, walls or slabs encountered during excavations, should be removed entirely from below proposed foundations and associated zones of influence (as determined by lines extending at least one foot laterally beyond footing edges for each vertical foot of depth) and excavated to at least two feet below proposed construction subgrade levels elsewhere. Foundations and slabs may remain in place below these depths below proposed ground-supported slabs, drive isles, and landscaped areas provided there is no interference with future construction. Any existing slab to remain should be thoroughly broken such that maximum particle size is 12 inches to allow vertical drainage of water. The demolition contractor should be required to conduct all earthwork in accordance with the recommendations in this report including backfilling any excavation, utility, etc. with structural fill. All fill or backfill placed in structural areas during any demolition operations should be placed as structural fill in accordance with Section 5.2, 5.3, and 5.11 of this report.

Difficult Excavation Considerations: Naturally deposited cobbles/boulders were encountered during this subsurface investigation at highly variable depths ranging between approximately four fbgs and 28.4 fbgs. As such, removal of dense glacial materials in deeper excavations may be required during construction, depending on final grading. Excavation difficulties will be more prevalent in confined excavations, such as foundations and utilities, footing and utility excavations may inadvertently become oversized due to the presence of boulders and require additional backfill materials.

Surface Preparation/Proofrolling: Prior to placing any fill or subbase materials to raise grades to the desired subgrade elevations, the existing exposed soils should be compacted to a firm and unyielding surface with several passes in two perpendicular directions of a minimum 10-ton, smooth drum roller. The surface should be proofrolled with a loaded tandem axle truck in the presence of the geotechnical engineer to help identify soft or loose pockets which may require removal and replacement or further investigation. Any fill or backfill should be placed and compacted in accordance with Section 5.3.

Weather Performance Criteria: Because portions of the site soils are moderately to highly moisture sensitive and may soften when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations and prepared subgrades to rainfall. Accordingly, excavation and fill placement procedures should be conducted during favorable weather conditions. Overexcavation of saturated soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

Subgrade Protection and Inspection: Every effort should be made to minimize disturbance of the on-site materials by construction traffic and surface runoff. The on-site soils will deteriorate when subjected to repeated wetting and construction traffic and likely will require extensive drying or overexcavation and replacement. Construction schedules and budgets should account for contingencies, such as importing materials to raise grades or restore overexcavations when construction must occur following wet weather or on an expedited basis. However, if properly protected and maintained during warm, dry weather as recommended herein, the site soils will provide adequate support for the proposed construction. The site contractors should employ necessary means and methods to protect the subgrade including, but not limited to the following:

- leaving the existing pavement in place as long as practical to protect the subgrade from freeze-thaw cycles and exposure to inclement weather;
- sealing exposed subgrade soils on a daily basis with a smooth drum roller operated in static mode;
- regrading the site as needed to maintain positive drainage away from construction areas;
- removing wet surficial soils and ruts immediately; and
- limiting exposure to construction traffic especially following inclement weather and subgrade thawing.

5.3 STRUCTURAL FILL AND BACKFILL

Imported Fill Material: Any imported material placed as structural fill or backfill to raise elevations or restore design grades should consist of clean, relatively well graded sand or gravel with a maximum particle

size of three inches and five percent to 10 percent of material finer than a #200 sieve. Silts, clays, and silty or clayey sands and gravels with higher percentage of fines and with a liquid limit less than 40 and a plasticity index less than 20 may be considered subject to the owner's approval, provided that the required moisture content and compaction controls are met. The material should be free of clay lumps, organics and deleterious material. Imported structural fill material should be approved by a qualified geotechnical engineer prior to delivery to the site.

On-Site Material: Based on the conditions disclosed by the soil borings, Whitestone anticipates that a majority of the underlying natural soils will be suitable for selective reuse as structural fill and/or backfill provided moisture contents are controlled within two percent of the optimum during favorable weather conditions. The reuse of the fine-grained soils (USCS: ML) and granular site soils with more than 12 percent fines (USCS: SM) typically is possible only during extended periods of ideal weather conditions. Reuse of these soils may require mixing with a granular material, extensive moisture conditioning, and/or drying to facilitate their reuse, workability, and compaction in fill areas.

The on-site soils will become increasingly difficult to reuse and compact where wetted beyond the optimum moisture content. Immediate re-use of on-site soil should not be anticipated. Materials that are, or become, exceedingly wet likely will require discing and aerating that may not be practical during wet seasons. Alternatively, imported fill materials may be used to attain the desired grades and expedite earthwork operations. The stripped asphaltic concrete pavement and topsoil should not be used as fill or backfill.

Cobble- and boulder-sized materials or similarly sized materials greater than three inches in diameter will need to be separated from on-site soils to be placed as structural fill or backfill. Cobble-sized materials between three inches to 12 inches may be crushed or individually placed in structural fill or backfill layers deeper than two feet below proposed foundation and pavement subgrade levels. Care must be taken to individually seat any large particles and to compact soil around large particles with hand operated equipment to minimize risk of void formation. Boulder-sized materials greater than 12 inches in diameter need to be crushed prior to replacement as structural fill materials. Materials greater than three inches in size should be placed a minimum of three feet from utilities.

Demolition Material: Demolition material, free of environmental restrictions, may be used as fill material provided the material is properly segregated and processed as recommended herein. Concrete masonry materials, if generated, should be crushed to a well graded blend with a maximum size of three inches in diameter. Stripped asphaltic materials and deleterious building materials such as wood, insulation, metal shingles etc. should not be used as general structural fill material.

Compaction and Placement Requirements: All fill and backfill should be placed in maximum nine- inch loose lifts and compacted to 95 percent of the maximum dry density within two percent of the optimum moisture content as determined by ASTM D 1557 (Modified Proctor). Whitestone recommends using a vibratory drum roller to compact the on-site soils or a small handheld vibratory compactor within excavations.

Structural Fill Testing: A sample of the imported fill material or any on-site material proposed for reuse as structural fill or backfill should be submitted to the geotechnical engineer for analysis and approval at least one week prior to its use. The placement of all fill and backfill should be monitored by a qualified engineering technician to ensure that the specified material and lift thicknesses are properly installed. A sufficient number of in-place density tests should be conducted to ensure that the specified compaction is achieved throughout the height of the fill or backfill.

5.4 GROUNDWATER CONTROL

Static groundwater was not encountered within borings conducted to the deepest depth explored of approximately 28.4 fbgs. However, perched/trapper water was encountered within several soil borings at depths ranging from approximately nine fbgs to 10 fbgs. As such, Whitestone anticipates that static groundwater will be deeper than proposed foundation and utility excavations and does not anticipate the need for extensive dewatering or permanent groundwater control. Trapped/perched water may be encountered within the finer-grained natural site soils, especially following precipitation events. As such, construction phase dewatering of trapped/perched water through the use of gravity fed sump pumps should be anticipated during excavation activities for this site. A gravity fed sump pump should be suitable for minor temporary dewatering of any trapped water or surface runoff encountered during excavations.

Because the subsurface soils will soften when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations to rainfall. Overexcavation of saturated soils and replacement with controlled structural fill and/or one foot to two feet of open graded gravel (such as 3/4-inch clean crushed stone) may be required prior to resuming work on disturbed subgrade soils.

5.5 FOUNDATIONS

Foundation Design Criteria: Whitestone recommends supporting the proposed structures on either conventional shallow spread foundations designed to bear within the underlying natural materials or controlled structural fill provided these materials are properly evaluated, placed and compacted in accordance with the recommendations in this report. Foundations bearing within the natural site soils or controlled structural fill may be designed to impart a maximum allowable net bearing pressure of 4,000 pounds per square foot.

All footing bottoms should be improved by in-trench compaction in the presence of the owner's geotechnical engineer. Regardless of loading conditions, proposed foundations should be sized no less than minimum dimensions of 24 inches for continuous wall footings and 36 inches for isolated column footings.

Below-grade wall footings should be designed so that the maximum toe pressure due to the combined effect of vertical loads and overturning moment does not exceed the recommended maximum allowable net bearing pressure. In addition, positive contact pressure should be maintained throughout the base of the footings such that no uplift or tension exists between the base of the footings and the supporting soil. Uplift loads should be resisted by the weight of the concrete. Lateral resistance should be provided by friction resistance at the base of the footings. A coefficient of friction against sliding of 0.35 is recommended for use for foundations bearing within on-site soils or imported structural fill soils.

Foundation Inspection/Overexcavation Criteria: Whitestone recommends that the suitability of the bearing soils along and below the footing bottoms be verified by a geotechnical engineer prior to placing concrete for the footings. Where areas of unsuitable materials are encountered in footing excavations, overexcavation and recompaction or replacement may be necessary to provide a suitable footing subgrade in accordance with Sections 5.2 and 5.3. Any overexcavation to be restored with structural fill will need to extend at least one foot laterally beyond footing edges for each vertical foot of overexcavation. Lateral overexcavation can be reduced if the grade is restored with lean concrete or approved flowable fill. The bottom of overexcavation should be compacted with vibrating plates or plate tampers ("jumping jacks") to compact locally disturbed materials.

Settlement: Whitestone estimates post construction settlements of proposed foundations of less than one inch if the recommendations outlined in this report are properly implemented. Differential settlements of building foundations should be less than one-half inch.

Frost Coverage: Footings subject to frost action should be placed at least 42 inches below adjacent exterior grades or the depth required by local building codes to provide protection from frost penetration. Interior footings not subject to frost action could be placed at a minimum depth of 18 inches below the slab subgrade provided the footings bear on properly prepared site soils or on properly placed structural subgrade.

5.6 FLOOR SLAB

Whitestone anticipates that the underlying natural soils and/or compacted structural fill and/or backfill placed to raise or restore design elevations are expected to be suitable for support of the proposed floor slabs provided these materials are properly compacted and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Any areas that are, or become, softened or disturbed as a result of wetting and/or repeated exposure to construction traffic should be removed and replaced with compacted structural fill. The properly prepared on-site soils are expected to yield a minimum subgrade modulus (k) of 150 psi/in.

A minimum four-inch layer of coarse aggregate, such as AASHTO #57 stone, dense graded aggregate, or equal, should be installed below ground-supported floor slabs to provide a capillary break. An impervious membrane also should be provided as a moisture vapor barrier beneath all floor slabs.

5.7 PAVEMENT DESIGN CRITERIA

General: Whitestone anticipates that the underlying natural materials, and/or compacted structural fill and/or backfill placed to raise or restore design elevations are expected to be suitable for support of the proposed pavements provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Localized areas of overexcavation may be anticipated if the subgrades are exposed to precipitation.

Design Criteria: A California Bearing Ratio value of five has been assigned to the properly prepared subgrade soils for pavement design purposes based on laboratory test results and climatic factors. This value was correlated with pertinent soil support values and assumed traffic loads to prepare flexible and rigid pavement designs per the AASHTO *Guide for the Design of Pavement Structures*.

Design traffic loads were assumed based on typical volumes for similar facilities and correlated with 18-kip equivalent single axle loads (ESAL) for a 20 year life. An estimated maximum load of 25,000 ESAL was used for all pavement areas assuming the pavement primarily will accommodate both automobile and limited heavier truck traffic. Actual pavement loads should be less than this value.

Pavement Sections: The recommended flexible pavement section is presented below:

FLEXIBLE PAVEMENT SECTION		
Layer	**Material**	**Thickness (Inches)**
Asphalt Surface	NYSDOT Type 7 or 7F Top	1.5
Asphalt Base	NYSDOT Type 3 Binder	2.5
Granular Subbase	NYSDOT Type 2 Subbase	6.0

A rigid concrete pavement should be used to provide suitable support at areas of high traffic or severe turns (such as at ingress/egress locations). The recommended rigid pavement is presented below in tabular format:

RIGID PAVEMENT SECTION		
Layer	**Material**	**Thickness (Inches)**
Surface	4,000 psi air-entrained concrete	5.0[1]
Base	NYSDOT Type 2 Subbase	6.0

Note[1]: The outer edges of concrete pavements are susceptible to damage as trucks move from rigid pavement to adjacent flexible pavement. Therefore, the thickness at the outer two feet of the rigid concrete pavement should be 12 inches.

5.8 LATERAL EARTH PRESSURES

General: No proposed retaining structures were identified on the *Soil Boring Plan* prepared by H2M however, below-grade walls may be required. While the design and investigation of retaining structures are beyond Whitestone's current scope of work, Whitestone would be pleased to assist with the calculation of lateral earth pressures based on the soil parameters presented herein during the structural design phase when final grading and wall geometries are available.

Lateral Earth Pressures: Temporary retaining structures and permanent retaining/below-grade walls may be required to resist lateral earth pressures. Proposed retaining/below-grade walls must be capable of withstanding active and at-rest earth pressures. Retaining/below-grade walls free to rotate generally can be designed to resist active earth pressures. Retaining/below-grade walls corners and restrained walls need to be designed to resist at-rest earth pressures. Such structures should be properly designed by the Owner's engineer. The following soil parameters apply to the encountered subsurface strata and may be used for design of the proposed temporary and permanent retaining structures.

LATERAL EARTH PRESSURE PARAMETERS		
Parameter	**On-Site Soils**	**Imported Granular Backfill**
Moist Density (γ_{moist})	140 pcf	140 pcf
Internal Friction Angle (φ)	28°	30°
Active Earth Pressure Coefficient (K_a)	0.36	0.33
Passive Earth Pressure Coefficient (K_p)	2.77	3
At-Rest Earth Pressure Coefficient (K_o)	0.53	0.5

Lateral earth pressure will depend on the backfill slope angle and the wall batter angle. A sloped backfill will add surcharge load and affect the angle of the resultant force. The effect of other surcharges will also need to be included in earth pressure calculations, including the loads imposed by adjacent structures and traffic. The effects of proposed sloped backfill surface grades, and proposed slopes beyond the toe of the retaining structure, if applicable, must be considered when calculating resultant forces to be resisted by the retaining structure. A coefficient of friction of 0.35 against sliding can be used for concrete on the existing site soils. Retaining/below-grade wall footings should be designed so that the combined effect of vertical and horizontal resultants and overturning moment does not exceed the maximum soil bearing capacity provided in Section 5.5.

Backfill Criteria: Whitestone recommends that granular soils be used to backfill behind the proposed retaining/below-grade walls. The granular backfill materials should consist of clean, relatively well graded sand or gravel with a maximum particle size of three inches and five percent to 15 percent of material finer than a #200 sieve. The material should be free of clay lumps, organics, and deleterious material. Limited portions of the on-site soils encountered consisted of poorly graded sand (USCS: SP) which are anticipated

to be satisfactory for retaining/below-grade wall backfill, if encountered during site excavations. The remaining portions of the existing site soils are not anticipated to be suitable for retaining/below-grade wall backfill. Cobbles/boulders greater than three inches should also not be used as backfill. Accordingly, imported granular soils may be required. A maximum density of 140 pcf should not be exceeded to avoid creating excessive lateral pressure on the walls during compaction operations.

Whitestone recommends that backfill directly behind any walls be compacted with light, hand-held compactors. Heavy compactors and grading equipment should not be allowed to operate within a zone of influence measured at a 45-degree angle from the base of the walls during backfilling to avoid developing excessive temporary or long-term lateral soil pressures.

Wall Drainage: Positive gravity drainage of the backfill should be provided at the base of the retaining/below-grade walls by a series of perforated pipes surrounded by at least 12 inches of clean crushed stone that discharges into a stormwater sewer or daylight to appropriate site surface drainage. Whitestone recommends that a two-foot wide zone of clean crushed stone or washed sand, separated from the backfill by a filter fabric, be constructed adjacent to the back of the wall. This zone should prevent the buildup of hydrostatic pressures and pressures from freezing moisture in the backfill. The vertical drain should be tied into the gravity drainage system (perforated pipe) installed at the base of the wall. Alternatively, temporary retaining walls may include weep holes instead of a drain tied to the site drainage system. If wall drainage is not provided, the wall should be designed to withstand full hydrostatic pressure.

Whitestone should be notified if any other retaining structures or design considerations requiring lateral earth pressure estimations are proposed. Specific recommendations for temporary retaining structures are beyond Whitestone's scope of work.

5.9 SEISMIC AND LIQUEFACTION CONSIDERATIONS

Based on a review of the subsurface conditions relevant to the *New York State International Building Code (2020)*, the subject site may be assigned a Site Class D. Based on the seismic zone and soil profile liquefaction considerations are not expected to have a substantial impact on design.

5.10 EXCAVATIONS

The soils encountered during this investigation within anticipated excavation depths are at least consistent with Type C Soil Conditions as defined by 29 CFR Part 1926 (OSHA) which require a maximum unbraced excavation angle of 1.5:1 (horizontal:vertical). Actual conditions encountered during construction should be evaluated by a competent person (as defined by OSHA) to ensure that safe excavation methods and/or shoring and bracing requirements are implemented.

5.11 SUPPLEMENTAL POST INVESTIGATION SERVICES

Supplemental Borings and Test Pits/ Final Design Review: Apparent naturally deposited cobbles/boulders were encountered during this subsurface investigation at highly variable depths ranging between approximately four fbgs and 28.4 fbgs. As such, removal of dense glacial materials in deeper excavations may be required during construction. Whitestone recommends that a supplemental subsurface investigation designed to address site-specific conditions for proposed construction, including refusal depths on apparent obstructions within the natural glacial deposits, should be conducted following demolition of the existing structures and finalization of the design concept, structural loading, grading, and general site layout. The final subsurface investigation and geotechnical evaluation should be conducted to obtain subsurface information across the site at more closely spaced intervals within the building footprint and new pavements areas as well as to confirm the recommendations provided within this report.

Construction Monitoring and Testing: The owner's geotechnical engineer with specific knowledge of the subsurface conditions and design recommendations should conduct inspection, testing, and consultation during construction as described in previous sections of this report. Monitoring and testing should also be conducted to verify that the existing site structures are properly demolished and subsequently backfilled, existing surface cover materials are properly removed, and suitable materials used for controlled fill are properly placed and compacted over suitable subgrade soils. The proofrolling of all subgrades prior to structural support should be witnessed and documented by the owner's geotechnical engineer.

SECTION 6.0
General Comments

Supplemental recommendations may be required upon finalization of construction plans or if significant changes are made in the characteristics or location of the proposed structure. Soil bearing conditions should be checked at the appropriate time for consistency with those conditions encountered during Whitestone's geotechnical investigation.

The recommendations presented herein should be utilized by a qualified engineer in preparing the project plans and specifications. The engineer should consider these recommendations as minimum physical standards which may be superseded by local and regional building codes and structural considerations. These recommendations are prepared for the sole use of H2M Architects & Engineers for the specific project detailed and should not be used by any third party. These recommendations are relevant to the design phase and should not be substituted for construction specifications.

The possibility exists that conditions between borings may differ from those at specific boring locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may alter soil and rock conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered.

Whitestone assumes that a qualified contractor will be employed to conduct the construction work, and that the contractor will be required to exercise care to ensure all excavations are conducted in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent properties and maintaining slope stability. Whitestone recommends that the services of the geotechnical engineer be engaged to test and evaluate the soils in the footing excavations prior to concreting in order to determine that the soils will support the bearing capacities. Monitoring and testing also should be conducted to verify that suitable materials are used for controlled fills and that they are properly placed and compacted over suitable subgrade soils.

The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information and the design details furnished by H2M Architects & Engineers. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties are implied or expressed.

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FIGURE 1
Test Location Plan

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0 60

1 inch = 60 ft.

LEGEND

B-1 — BORING

(I-1) — INFILTRATION TEST

SUBJECT PROPERTY BOUNDARY

REFERENCE

THIS PLAN IS BASED ON A SEPTEMBER 2022 WHITE PLAINS CITY SCHOOL DISTRICT HIGH SCHOOL SOIL BORING PLAN PREPARED BY H2M ARCHITECTS & ENGINEERS & ALL SITE LOCATIONS ARE APPROXIMATE.

WHITESTONE
An Employee-Owned Company
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908.668.7777 WHITESTONEASSOC.COM

DRAWING TITLE: **TEST LOCATION PLAN**

CLIENT: **H2M ARCHITECTS & ENGINEERS**

PROJECT: WHITE PLAINS HIGH SCHOOL IMPROVEMENTS
550 NORTH STREET
WHITE PLAINS, WESTCHESTER COUNTY, NY

PROJECT #: GJ2219662.Y00	
DESIGNED BY: GR	PROJ. MGR.: MK
DATE: 10/28/22	FIGURE: 1
SCALE: 1" = 60'	

WHITESTONE

APPENDIX A
Records of Subsurface Exploration

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/10/2022	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	27.0 feet bgs	**Date Completed:**	10/10/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	9.0 (P) | NS		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	--- | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		2 - 2 - 2 - 2	15	4		GLACIAL DEPOSITS		Light Brown Silty Sand, Moist, Very Loose (SM)	
2 - 4	S-2		3 - 9 - 14 - 21	14	23				As Above, with Gravel, Medium Dense (SM)	
						4.0				
4 - 6	S-3		13 - 14 - 14 - 10	18	28	5.0			As Above (SM)	
6 - 8	S-4		10 - 11 - 11 - 9	18	22				As Above (SM)	
						8.0				
8 - 10	S-5		9 - 8 - 10 - 11	16	18				As Above, Wet (SM)	
						10.0				
10 - 12	S-6		5 - 15 - 16 - 21	18	31				As Above, Grayish-Brown, Dense (SM)	
						15.0				
15 - 15.9	S-7		37 - 50/5"	10	50/5"				As Above, Very Dense (SM)	
						20.0				
20 - 21.4	S-8		34 - 35 - 36 - 50/4"	-	71				As Above, Gray (SM)	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

				Water Depth | Elevation (feet bgs) | (feet)	Cave-In Depth | Elevation (feet bgs) | (feet)
Surface Elevation:	± NS feet	**Date Started:**	10/10/2022		
Termination Depth:	27.0 feet bgs	**Date Completed:**	10/10/2022		
Proposed Location:	Building	**Logged By:**	MO	**During:** 9.0 (P) | NS	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** --- | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0				
25 - 25.4	S-9	X	50/4"	-	50/4"		GLACIAL DEPOSITS		Light Brown Poorly Graded Sand, Wet, Very Dense (SP)	
						27.0				
									Boring Log B-1 Terminated at a Depth of 27.0 Feet Below Ground Surface Due to Auger Refusal	Auger Refusal @ 27.0 fbgs
						30.0				
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/10/2022	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	28.4 feet bgs	**Date Completed:**	10/10/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	10.0 (P) | NS		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	--- | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		1 - 1 - 1 - 2	15	2		GLACIAL DEPOSITS		Brown Silt, Moist, Soft (ML)	Qu = 0.5 tsf
2 - 4	S-2		3 - 2 - 1 - 3	14	3	4.0			As Above, Light Brown (ML)	Qu = 0.5 tsf
4 - 6	S-3		6 - 11 - 13 - 16	17	24	5.0			Brown Silty Sand with Gravel, Moist, Medium Dense (SM)	
6 - 8	S-4		12 - 13 - 17 - 16	18	30				As Above, Dense (SM)	
8 - 10	S-5		11 - 15 - 11 - 13	24	26				As Above, Very Moist, Medium Dense (SM)	
10 - 12	S-6		8 - 10 - 13 - 18	22	23	10.0			As Above, Wet (SM)	
						15.0				
15 - 17	S-7		32 - 37 - 43 - 50	24	60				Gray Poorly Graded Sand with Gravel, Moist, Very Dense (SP)	
						20.0				
20 - 22	S-8		14 - 15 - 21 - 21	16	36				Gray/Brown Silty Sand, Wet, Dense (SM)	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/10/2022		**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	28.4 feet bgs	**Date Completed:**	10/10/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	10.0 (P) | NS		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	--- | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0				
25 - 25.8	S-9	X	27 - 50/3"	3	50/3"		GLACIAL DEPOSITS		Gray Sand with Gravel, Wet, Very Dense (SP)	
28 - 28.4	S-10	X	50/5"	4	50/5"	28.5			Gray Sand with Gravel, Wet, Very Dense (SP)	Auger Refusal @ 28.0 fbgs
									Boring Log B-2 Terminated at a Depth of 28.4 Feet Below Ground Surface Due to Auger and Spoon Refusal	Spoon Refusal @ 28.4 fbgs
						30.0				
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/11/2022	**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**
Termination Depth:	4.0 feet bgs	**Date Completed:**	10/11/2022		
Proposed Location:	Building	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0.5 - 2	S-1		2 - 4 - 7 - 17	14	11		GLACIAL DEPOSITS		Brown Silty Sand with Gravel, Moist, Medium Dense (SM)	
2 - 4	S-2		7 - 11 - 32 - 49	15	43	4.0			As Above, with Gravel (SM)	
						5.0			Boring Log B-3 Terminated at a Depth of 4.0 Feet Below Ground Surface Due to Auger Refusal	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Page 1 of 1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/11/2022	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	12.0 feet bgs	**Date Completed:**	10/11/2022				
Proposed Location:	Building	**Logged By:**	MO	**During:**	NE | ---		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	NE | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		1 - 1 - 1 - 2	13	2		GLACIAL DEPOSITS		Brown Silty Sand, Moist, Very Loose (SM)	
2 - 4	S-2		3 - 6 - 3 - 11	15	9				As Above, Loose (SM)	
4 - 6	S-3		12 - 11 - 10 - 10	12	21	5.0			As Above, Medium Dense (SM)	
6 - 8	S-4		12 - 10 - 10 - 10	14	20				As Above (SM)	
8 - 10	S-5		9 - 10 - 31 - 22	15	41				As Above, with Gravel, Dense (SM)	
10 - 11.9	S-6		32 - 26 - 16 - 50/5"	15	42	10.0			As Above (SM)	Auger Refusal @ 12.0 fbgs
						12.0			Boring Log B-4 Terminated at a Depth of 12.0 Feet Below Ground Surface Due to Auger and Spoon Refusal	Spoon Refusal @ 12.0 fbgs
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-5

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

				Water Depth | Elevation (feet bgs) | (feet)	Cave-In Depth | Elevation (feet bgs) | (feet)
Surface Elevation:	± NS feet	**Date Started:**	10/11/2022		
Termination Depth:	6.4 feet bgs	**Date Completed:**	10/11/2022		
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		4 - 5 - 6 - 14	18	11		GLACIAL DEPOSITS		Brown Silty Sand, Moist, Medium Dense (SM)	
2 - 4	S-2		12 - 12 - 11 - 8	16	23	4.0			As Above, with Gravel (SM)	
4 - 6	S-3		12 - 18 - 24 - 50/5"	22	42	5.0			Brown/White Poorly Graded Sand with Gravel, Slightly Moist, Dense (SP)	
6 - 6.4	S-4		50/5"		50/5"	6.0 6.4			White Poorly Graded Gravel with Sand, Moist, Very Dense (GP)	
						10.0			Boring Log B-5 Terminated at a Depth of 6.4 Feet Below Ground Surface Due to Auger and Spoon Refusal	Auger and Spoon Refusal @ 6.5 fbgs
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-6

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/12/2022		**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	4.0 feet bgs	**Date Completed:**	10/12/2022				
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:**	NE | ---		
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:**	NE | ---	**At Completion:**	--- | ---
		Equipment:	AMS-9580	**24 Hours:**	--- | ---	**24 Hours:**	--- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		4 - 6 - 6 - 8	14	12		GLACIAL DEPOSITS		Light Brown Silty Sand with Gravel (rock chips), Moist, Medium Dense (SM)	
2 - 4	S-2		6 - 3 - 5 - 10	16	8	4.0			As Above (SM)	
4 - 4	S-3		50/0"	NR	50/0"	5.0			Boring Log B-6 Terminated at a Depth of 4.0 Feet Below Ground Surface Due to Refusal	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-7

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

Surface Elevation:	± NS feet	**Date Started:**	10/12/2022	**Water Depth (feet bgs) | Elevation (feet)**	**Cave-In Depth (feet bgs) | Elevation (feet)**
Termination Depth:	5.3 feet bgs	**Date Completed:**	10/12/2022		
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		4 - 6 - 8 - 10	16	14		GLACIAL DEPOSITS		Light Brown Silty Sand with Gravel, Moist, Medium Dense (SM)	
2 - 4	S-2		8 - 7 - 8 - 23	17	15				As Above (SM)	
4 - 5.3	S-3		29 - 27 - 50/3"	13	77/9"				As Above, Very Dense (SM)	
						5.3			Boring Log B-7 Terminated at a Depth of 5.3 Feet Below Ground Surface Due to Auger Refusal	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-8

Page 1 of 1

Project:	White Plains High School Improvements	**WAI Project No.:**	GJ2219662.Y00
Location:	550 North Street; White Plains, Westchester County, NY	**Client:**	H2M Architects & Engineers

				Water Depth | Elevation (feet bgs) | (feet)	Cave-In Depth | Elevation (feet bgs) | (feet)
Surface Elevation:	± NS feet	**Date Started:**	10/12/2022		
Termination Depth:	15.0 feet bgs	**Date Completed:**	10/12/2022		
Proposed Location:	Athletic Field	**Logged By:**	MO	**During:** NE | ---	
Drill / Test Method:	HSA / SPT	**Contractor:**	ECG	**At Completion:** NE | ---	**At Completion:** --- | ---
		Equipment:	AMS-9580	**24 Hours:** --- | ---	**24 Hours:** --- | ---

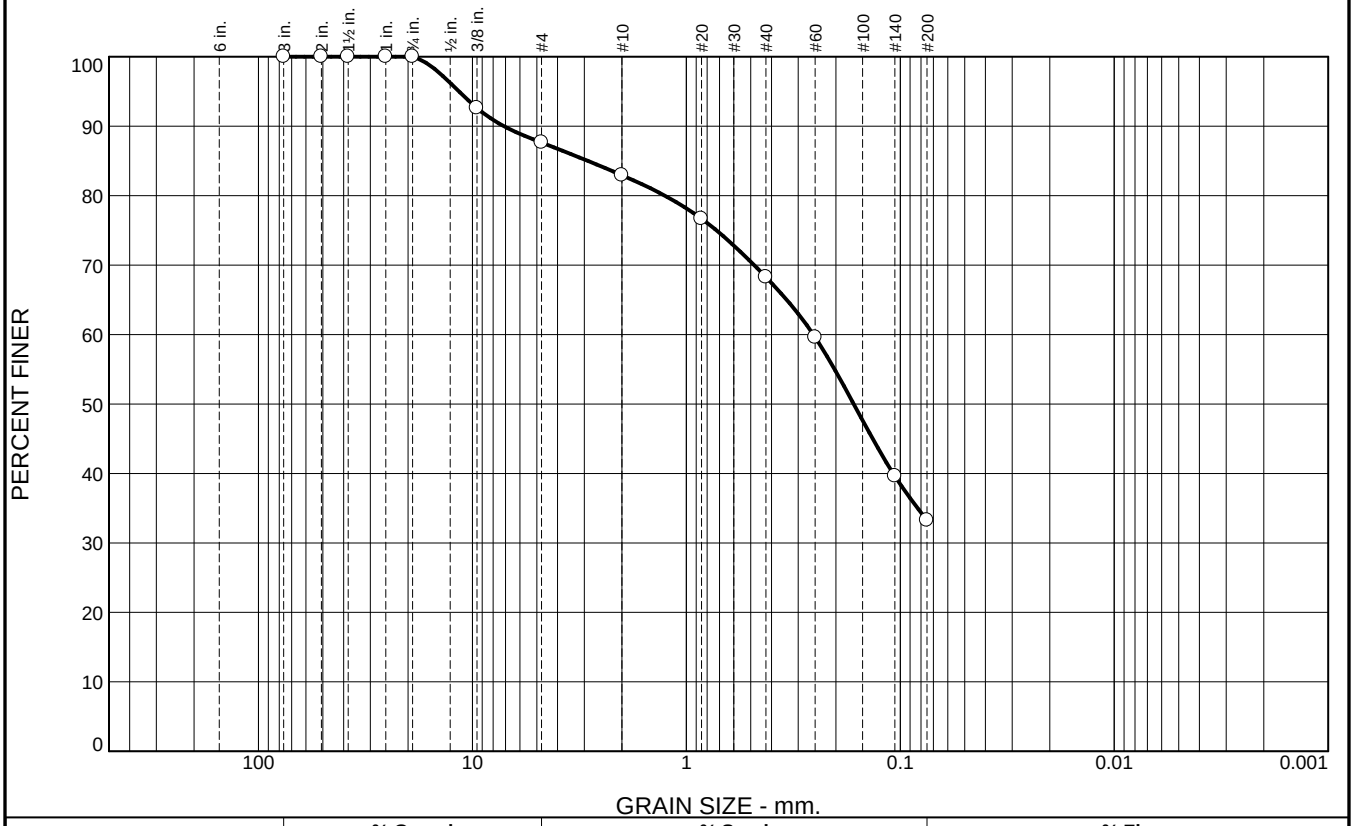
SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
						0.5	TOPSOIL		6" Topsoil	
0 - 2	S-1		1 - 2 - 3 - 4	16	5		GLACIAL DEPOSITS		Brown Silty Sand, Moist, Loose (SM)	
2 - 4	S-2		8 - 7 - 12 - 16	14	19				As Above, with Gravel, Medium Dense (SM)	
						4.0				
4 - 6	S-3		4 - 3 - 5 - 6	13	8	5.0			Dark Brown Clayey Sand, Moist, Loose (SC)	
6 - 8	S-4		2 - 6 - 5 - 4	15	11				Dark Brown Sandy Silt, Moist, Stiff (ML)	Qu = 1.0 tsf
						8.0				
8 - 10	S-5		6 - 16 - 12 - 14	12	28				As Above with Gravel, Very Still (ML)	Qu = 2.0 tsf
						10.0				
10 - 12	S-6		49 - 9 - 6 - 6	14	14				As Above, Stiff (ML)	Qu = 2.5 tsf
						15.0				
									Boring Log B-7 Terminated at a Depth of 15.0 Feet Below Ground Surface Due to Auger Refusal	Auger Refusal @ 15.0 fbgs (Broke the Split Spoon)
						20.0				
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

APPENDIX B
Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.4	4.7	14.6	35.1	33.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	92.6		
#4	87.6		
#10	82.9		
#20	76.7		
#40	68.3		
#60	59.6		
#140	39.6		
#200	33.2		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 7.1361 D_{85}= 2.8876 D_{60}= 0.2551
D_{50}= 0.1651 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 9.8 %

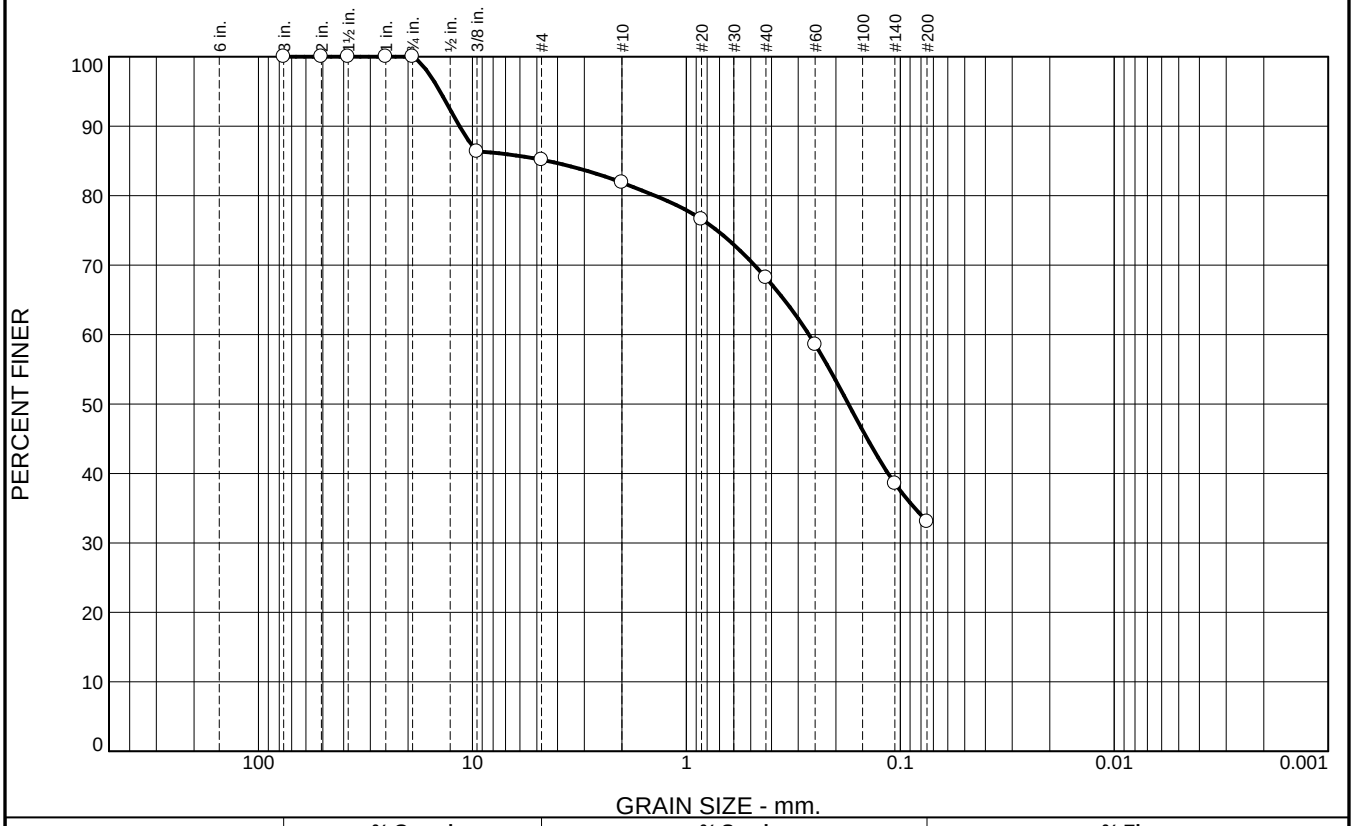
Source of Sample: B-1 **Depth:** 6.0' - 8.0'
Sample Number: S-4

Date: 10/22/2022

WHITESTONE ASSOCIATES, INC.
Warren, New Jersey

Client: H2M Architects & Engineers/White Plains City School District
Project: White Plains High School Improvements
550 North Street, White Plains, Westchester County, NY
Project No: GJ2219662.Y00 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	14.9	3.2	13.7	35.1	33.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	86.4		
#4	85.1		
#10	81.9		
#20	76.6		
#40	68.2		
#60	58.6		
#140	38.6		
#200	33.1		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 11.4889 D_{85}= 4.4892 D_{60}= 0.2675
D_{50}= 0.1748 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 4.7 %

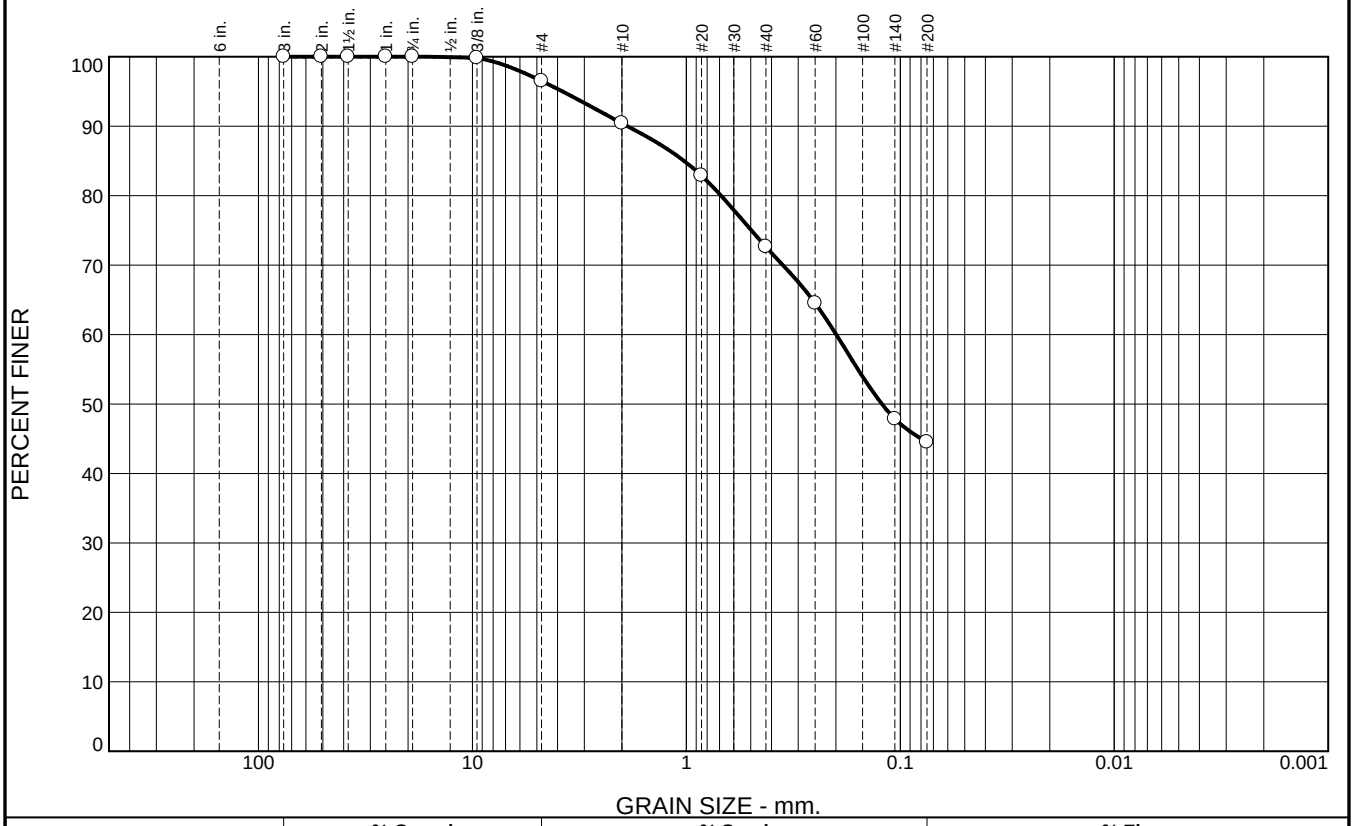
Source of Sample: B-4 **Depth:** 8.0' - 10.0'
Sample Number: S-5

Date: 10/22/2022

WHITESTONE ASSOCIATES, INC.
Warren, New Jersey

Client: H2M Architects & Engineers/White Plains City School District
Project: White Plains High School Improvements
550 North Street, White Plains, Westchester County, NY
Project No: GJ2219662.Y00 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.5	6.1	17.8	28.1	44.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	99.8		
#4	96.5		
#10	90.4		
#20	82.9		
#40	72.6		
#60	64.5		
#140	47.9		
#200	44.5		

* (no specification provided)

Material Description

Clayey Sand

Atterberg Limits

PL= 16 LL= 27 PI= 11

Coefficients

D_{90}= 1.8865 D_{85}= 1.0253 D_{60}= 0.1994
D_{50}= 0.1219 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO= A-6(2)

Remarks

W_n = 6.3 %

Source of Sample: B-8 **Depth:** 4.0' - 6.0'
Sample Number: S-3

Date: 10/22/2022

WHITESTONE ASSOCIATES, INC.
Warren, New Jersey

Client: H2M Architects & Engineers/White Plains City School District
Project: White Plains High School Improvements
550 North Street, White Plains, Westchester County, NY
Project No: GJ2219662.Y00 **Figure**

WHITESTONE

APPENDIX C
Infiltration Test Results

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-1@B-1

Project: White Plains High School Improvements

Date: 10/10/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 8.2

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	10:55	11:55	24.0	8.0	16.0	1.0	---
1	11:55	12:55	24.0	16.0	8.0	1.0	8.0
2	12:55	1:55	24.0	18.0	6.0	1.0	6.0
3	1:55	2:55	24.0	18.0	6.0	1.0	6.0

Remarks: Field *i* = 6.7 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-2@B-2

Project: White Plains High School Improvements

Date: 10/10/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 8.4

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	12:53	1:53	24.0	19.0	5.0	1.0	---
1	1:55	2:55	24.0	20.0	4.0	1.0	4.0
2	2:55	3:55	24.0	20.0	4.0	1.0	4.0

Remarks: Field *i* = 4.0 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-3@B-4

Project: White Plains High School Improvements

Date: 10/11/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 8.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	11:21	12:21	24.0	22.0	2.0	1.0	---
1	12:21	1:21	24.0	24.0	0.0	1.0	< 0.2
2	1:21	2:21	24.0	24.0	0.0	1.0	< 0.2

Remarks: Field *i* = < 0.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-4@B-5

Project: White Plains High School Improvements

Date: 10/11/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 5.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	2:56	3:56	24.0	22.0	2.0	1.0	---
1	3:58	4:58	24.0	23.0	1.0	1.0	1.0

Remarks: Field i = 1.0 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-5@B-6

Project: White Plains High School Improvements

Date: 10/12/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 2.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	9:36	10:36	24.0	23.0	1.0	1.0	---
1	10:36	11:36	24.0	24.0	0.0	1.0	< 0.2
2	11:36	12:36	24.0	24.0	0.0	1.0	< 0.2

Remarks: Field *i* = < 0.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-6@B-7

Project: White Plains High School Improvements

Date: 10/12/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 2.5

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	10:01	11:01	24.0	23.0	1.0	1.0	---
1	11:01	12:01	24.0	23.0	1.0	1.0	1.0
2	12:01	1:01	24.0	23.0	1.0	1.0	1.0

Remarks: Field *i* = 1.0 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

INFILTRATION TEST

Client: H2M Architects & Engineers

Test Hole No.: I-7@B-8

Project: White Plains High School Improvements

Date: 10/12/2022

Location: 550 North Street

Weather: Clear

White Plains, Westchester County, NY

Surface Elevation: NS

File No. GJ2219662.Y00

Test Depth (Feet): 7.0

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	11:49	12:49	24.0	23.8	0.2	1.0	---
1	12:49	1:49	24.0	23.8	0.2	1.0	0.2

Remarks: Field *i* = 0.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed

WHITESTONE

APPENDIX D
Supplemental Information (USCS, Terms & Symbols)

WHITESTONE

30 INDEPENDENCE BOULEVARD
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whitestoneassoc.com

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT	
TRACE	1% TO 10%
LITTLE	10% TO 20%
SOME	20% TO 35%
AND	35% TO 50%

COMPACTNESS*
Sand and/or Gravel

RELATIVE DENSITY	
LOOSE	0% TO 40%
MEDIUM DENSE	40% TO 70%
DENSE	70% TO 90%
VERY DENSE	90% TO 100%

CONSISTENCY*
Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT	
VERY SOFT	LESS THAN 250
SOFT	250 TO 500
MEDIUM	500 TO 1000
STIFF	1000 TO 2000
VERY STIFF	2000 TO 4000
HARD	GREATER THAN 4000

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.*

L:\Geotechnical Forms and References\Reports\USCSTRMSSYM NJ.docx

WHITESTONE

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
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GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
Qu: Unconfined compressive strength, TSF.
Qp: Penetrometer value, unconfined compressive strength, TSF.
Mc: Moisture content, %.
LL: Liquid limit, %.
PI: Plasticity index, %.
δd: Natural dry density, PCF.
▼: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

NE: Not Encountered (Groundwater was not encountered).
SS: Split-Spoon - 1 ⅜" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
OB: Diamond Bit.
CB: Carbide Bit
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

Term (Non-Cohesive Soils)	Standard Penetration Resistance
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Term (Cohesive Soils)	Qu (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

Other Office Locations:

CHALFONT, PA 215.712.2700 | SOUTHBOROUGH, MA 508.485.0755 | ROCKY HILL, CT 860.726.7889 | WALL, NJ 732.592.2101 | PHILADELPHIA, PA 215.848.2323 | BEDFORD, NH 603.514.2230 | TAMPA, FL 813.851.0690 | MIAMI, FL 786.783.6966

Environmental & Geotechnical Engineers & Consultants

Appendix C

Example SWPPP Inspection Report

CONSTRUCTION STORMWATER INSPECTION REPORT

SECTION A: Site Information

Permit No.:	**Date of Inspection:**	**Time of Inspection:**	**Date of Last Inspection:**
Project Name:		**Stage of Construction**	**Weather Conditions**
Site Location:		**Site Description:**	
Contact at Site:		**Title:**	
Phone No.:		**e-mail:**	

SECTION B: Applicant's Information

Name:	**e-mail:**
Phone No.	**Fax No.:**
Address:	

SECTION C: General Contractor's Information

Name:	**e-mail:**
Phone No.	**Fax No.:**
Address:	

SECTION D: Engineer's Information

Name:	**e-mail:**
Phone No.	**Fax No.:**
Address:	

SECTION E: Document Verification

Criteria	**NA**	**YES**	**NO**	**Comments**
NOI posted at construction site				
SPDES General Permit retained at construction site				
SWPPP retained at construction site				
• Updated as site conditions change				
• Contains monthly/quarterly written summaries of compliance status				

SECTION F: Area of Disturbance

Criteria	NA	YES	NO	Comments
Less than 5 acres of disturbed soil				
• If no, was there prior written approval?				
Disturbance within limits of approved plans				

SECTION G: Water Quality

Polluted discharges	NA	No	Yes	Comments:
Discharges show visible signs of:	__ Sediment __ Floatables __ Oil/Grease __Turbidity __Other_____			
Receiving waters impacted:	__ Lake __ Bay __ Stream __Wetland __Other_____			

SECTION H: General Site Conditions

Criteria	Condition*				Comments
	NA	S	M	U	
Litter/debris management					
Sediment and erosion control facilities					
Impact on adjacent property					
Dust control					

*** NA**=Not Applicable; **S**=Satisfactory; **M**=Marginal; **U**=Unsatisfactory

SECTION I: Temporary Stream Crossings

Criteria	Condition*				Comments
	NA	S	M	U	
Pipe size spanning creeks					
Non-woven geotextile fabric installed beneath approaches					
Aggregate fill					
Rock on approaches removes sediment from vehicles and prevents Sediment from entering streams					

*** NA**=Not Applicable; **S**=Satisfactory; **M**=Marginal; **U**=Unsatisfactory

SECTION J: Runoff Control Practices

Criteria	Condition*				Comments
	NA	S	M	U	
Excavation dewatering					
• Upstream berms (one-foot min. freeboard)					
• Downstream berms					
• Clean water from upstream pool pumped to downstream pool					
• Sediment-laden water discharged to silt trapping device					
Level spreader installation (constructed on undisturbed soil)					
• Flow sheets do not erode downstream edge					
Interceptor dikes and swales installation					
• Side slopes 2:1 or flatter					
• Stabilized by geotextile fabric, seed or mulch					
• Sediment-laden runoff is directed to sediment trapping device					
Stone check dams installation					
• Stable channel					
• Lack of a permanent pool behind dam					
• Regular removal of accumulated sediment					
Rock outlet protection installation					
• Installed concurrently with pipe installation					

*** NA**=Not Applicable; **S**=Satisfactory; **M**=Marginal; **U**=Unsatisfactory

SECTION K: Soil Stabilization

Criteria	Condition*				Comments
	NA	S	M	U	
Topsoil and stockpiles					
• With vegetation					
• With mulch					
• Sediment control installed at toe of slope					
Revegetation					
• Temporary seeding and mulch applied to idle areas					
• Minimum of 4 inches topsoil applied under permanent seedings					

*** NA**=Not Applicable; **S**=Satisfactory; **M**=Marginal; **U**=Unsatisfactory

SECTION L: Sediment Control Practices

Criteria	Condition*				Comments
	NA	S	M	U	
Stabilized construction entrance installation					
• Drainage prevents ponding					
• Stone removes mud from vehicles					
• All traffic uses the entrance					
Silt fence installation					
• On contour and 10' from toe of slope					
• Not across conveyance channels					
• End stakes wrapped together at joints					
• Fabric is buried min 6"					
• Posts are stable, fabric is tight and not damaged					
• Sediment accumulation (note % of design capacity in comments)					
Storm drain inlet protection					
• Drainage area is less than 1 acre					
• Sediment accumulation (note % of design capacity in comments)					
• Excavated drop inlet protection					
- 900 cu. ft. per acre of disturbed land					
- 2:1 side slopes					
• Stone and block drop inlet protection					
- Concrete blocks installed lengthwise					
- Wire screen placed between #3 crushed stone & concrete blocks					
• Filter fabric drop inlet protection					
- 2"x4" frame					
- Posts (stable; spaced max. 3' apart)					
- Fabric *undamaged; embedded 1' to 1.5' below ground; stapled to frame/posts at max. spacing of 8"					
• Curb drop inlet protection					
- 2"x4" frame					
- Continuous wire mesh across throat (30" min. width, 4' longer than throat) shaped and nailed to 2"x4" weir					
- Weir nailed to 2"x4" spacers (9" long, 6' max. apart)					
- Placed across inlet and secured by 2"x4"					

***** **NA**=Not Applicable; **S**=Satisfactory; **M**=Marginal; **U**=Unsatisfactory

SECTION L: Sediment Control Practices (Con't)

Criteria	Condition*				Comments
	NA	S	M	U	
Temporary sediment trap installation					
• Geotextile fabric placed beneath rock fill					
• Sediment accumulation (note % of design capacity in comments)					
Temporary sediment basin installation					
• Side slopes stabilized with seed or mulch					
• Structure flushed and surface restored upon removal of facility					
• Sediment accumulation (note % of design capacity in comments)					
Inspections occur at least every 7 calendar days					
Inspections occur at within 24 hours of any storm event of 0.5" or greater					
Effectiveness of erosion and sediment control practices is evaluated at time of inspection and documented					
Inspection reports maintained in log book at site and are available for review					
Sediment is removed from traps/ponds when design capacity is reduced by 50%					
Site inspections are being performed by a qualified inspector					
Reports are properly signed/certified					

*** NA**=Not Applicable; **S**=Satisfactory; **M**=Marginal; **U**=Unsatisfactory

SECTION N: Additional Comments/Notes

SECTION O: Overall Inspection Rating

☐ **Satisfactory** ☐ **Marginal** ☐ **Unsatisfactory**

Form Completed By:

Name (Print):	Signature:	Date:

Appendix D

Copy of Electronic Notice of Intent (eNOI) & Supplemental Signatory Forms Contractor & Subcontractor Certification Statements

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.40

(Submission #: HQ7-FHE2-9RH7D, version 1)

Details

Originally Started By	Sean Peters
Alternate Identifier	White Plains High School Addition
Submission ID	HQ7-FHE2-9RH7D
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
White Plains City School District

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Hernandez-Delgado

Owner/Operator Contact Person First Name
Xavier

Owner/Operator Mailing Address
5 Homeside Lane

City
White Plains

State
NY

Zip
10605

Phone
(914) 422-2206

Email
xavierhernandez@wpcsd.k12.ny.us

Federal Tax ID
13-6007183W

> If the owner/operator is an organization, provide the Federal Tax ID number, or Employer Identification Number (EIN), in the format xx-xxxxxxx. If the owner/operator is an individual and not an organization, enter "Not Applicable" or "N/A" and do not provide the individual's social security number.

Project Location

Project/Site Name
White Plains High School Addition

Street Address (Not P.O. Box)
550 North Street

Side of Street
East

City/Town/Village (THAT ISSUES BUILDING PERMIT)
White Plains

State
NY

Zip
10605

DEC Region
3

> The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on "Other Useful Reference Layers" on the left side of the map, then click on "DEC Administrative Boundary." Zoom out as needed to see the Region boundaries.
>
> For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
WESTCHESTER

Name of Nearest Cross Street
Bryant Avenue

Distance to Nearest Cross Street (Feet)
800

Project In Relation to Cross Street
South

Tax Map Numbers Section-Block-Parcel
131.11-1-1

Tax Map Numbers
NONE PROVIDED

> If the project does not have tax map numbers (e.g. linear projects), enter “Not Applicable” or "N/A".

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.020764400764605,-73.73904402212081

Project Details

2. What is the nature of this project?
New Construction

> For the purposes of this eNOI, “New Construction” refers to any project that does not involve the disturbance of existing impervious area (i.e. 0 acres). If existing impervious area will be disturbed on the project site, it is considered redevelopment with either increase in impervious area or no increase in impervious area.

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Institutional/School

Post-Development Future Land Use
Institutional/School

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
140.1

Total Area to be Disturbed (acres)
1.8

Existing Impervious Area to be Disturbed (acres)
0.8

Future Impervious Area Within Disturbed Area (acres)
1.0

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
63

D (%)
37

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
06/30/2025

End Date
07/30/2027

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Mamaroneck River

> Drainage ditches and storm sewer systems are not considered surface waterbodies. Please identify the surface waterbody that they discharge to. If the nearest surface waterbody is unnamed, provide a description of the waterbody, such as, “Unnamed tributary to Niagara River.”

9a. Type of waterbody identified in question 9?
River Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
Yes

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
Yes

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

> Please use the DEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm if this site is located in one of the watersheds of an AA or AA-S classified water. To view the watershed areas, click on “Permit Related Layers” on the left side of the map, then click on “Class AA AAS Watersheds.”

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
NONE PROVIDED

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

16. What is the name of the municipality/entity that owns the separate storm sewer system?
City of White Plains

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
Yes

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the 2015 or 2024 NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Sean F. Peters, PE

Contact Name (Last, First)
Peters, Sean

Mailing Address
2 Executive Blvd

City
Suffern

State
NY

Zip
10901

Phone
8453577238

Email
speters@h2m.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
D2_SWPPP Preparer Cert_signed.pdf - 10/18/2024 02:14 PM
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Construction Road Stabilization
Dust Control
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Mulching
Protecting Vegetation
Seeding
Topsoiling

Permanent Structural
Land Grading

Other
NONE PROVIDED

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Reduction of Clearing and Grading
Roadway Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual.
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.077

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.78

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
NONE PROVIDED

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
NONE PROVIDED

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

36a. The need to provide channel protection has been waived because:
Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
11.32

Post-Development (CFS)
9.77

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
20.77

Post-Development (CFS)
20.27

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
White Plains City School District

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
.58

Total Contributing Impervious Acres for Bioretention (F-5)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
No

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
NONE PROVIDED

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
D4_SWPPP Owner Cert.pdf - 03/26/2025 09:40 AM
Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
3/26/2025 9:40 AM	D4_SWPPP Owner Cert.pdf	Attachment	Sean Peters
10/18/2024 2:14 PM	D2_SWPPP Preparer Cert_signed.pdf	Attachment	Sean Peters

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

Project/Site Name:	White Plains High School Addition
eNOI Submission ID:	HQB-CDPN-BD9XS
Owner/Operator Name:	White Plains School District

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the requirements of GP-0-25-001. I certify under penalty of law that the SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sean	F	Peters
SWPPP Preparer First Name	MI	SWPPP Preparer Last Name

Sean Peters

Digitally signed by Sean Peters
DN: cn=Sean Peters, o=H2M architects+ engineers, ou=Project Engineer, email=speters@h2m.com, c=US
Date: 2025.03.26 10:50:14 -04'00'

Signature

3/26/2025

Date

Owner/Operator Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b. or Part I.F.2. and 3., the completed form must be attached to the eNOI or the Request to Continue Coverage, and submitted to NYSDEC electronically.

Project/Site Name: White Plains High School Addition

eNOI Submission ID: HQ7-FHE2-9RH7D

eNOI Submitted by: ☐ **Owner/Operator** ☑ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I hereby certify that I read, and will comply with, the GP-0-25-001 permit requirements. I understand that authorization to discharge under the permit for the project/site named above is dependent on receipt of a Letter of Authorization (LOA) or a Letter of Continued Coverage (LOCC) from the New York State Department of Environmental Conservation (NYSDEC) in accordance with CGP Part I.D.3.b. or Part I.F.4. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Ann		Vaccaro-Teich
Owner/Operator First Name	MI	Owner/Operator Last Name

Signature

03/19/25

Date

Revised: January 2025

Contractor or Subcontractor Certification Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Name: _____

Address: _____

_____

Telephone number: _____

Contractor Representative:

Name: _____ Title: _____

Signature: _____ Date: _____

Trained Contractor (if different from above):

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Responsibilities

Elements of SWPPP above contractor is responsible for implementing:

_____

_____

_____

_____

Contractor or Subcontractor Certification Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Name: _____

Address: _____

_____

Telephone number: _____

Contractor Representative:

Name: _____ Title: _____

Signature: _____ Date: _____

Trained Contractor (if different from above):

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Responsibilities

Elements of SWPPP above contractor is responsible for implementing:

_____

_____

_____

_____

Contractor or Subcontractor Certification Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Name: _____

Address: _____

_____

Telephone number: _____

Contractor Representative:

Name: _____ Title: _____

Signature: _____ Date: _____

Trained Contractor (if different from above):

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Responsibilities

Elements of SWPPP above contractor is responsible for implementing:

_____

_____

_____

_____

MS4 SWPPP Acceptance Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information
1. Owner/Operator Name: **White Plains City School District**
2. Contact Person: **Xavier Hernandez-Delgado**
3. Street Address: **5 Homeside Lane**
4. City/State/Zip: **White Plains, NY 10605**
II. Project Site Information
5. Project/Site Name: **White Plains High School Addition**
6. Street Address: **550 North Street**
7. City/State/Zip: **White Plains, NY 10605**
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by: **Sean F. Peters, PE**
9. Title/Position: **Project Engineer**
10. Date Final SWPPP Reviewed and Accepted: **3/28/2025**
IV. Regulated MS4 Information
11. Name of MS4 Operator: **White Plains City School District**
12. MS4 SPDES Permit Identification Number: NYR20A
13. Street Address: **5 Homeside Lane**
14. City/State/Zip: **White Plains, NY 10605**
15. Telephone Number: **(914) 422-2206**

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in section II. of this form has been reviewed and meets the substantive requirements in the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP). Note: The MS4 Operator, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 Operator does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name[1]: **Xavier Hernandez-Delgado**

Title/Position: **MS4 Official**

Signature:

Date: 3/29/25

VI. Additional Information

[1] Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.

NEW YORK STATE | Department of Environmental Conservation

KATHY HOCHUL
Governor

AMANDA LEFTON
Acting Commissioner

March 31, 2025

White Plains City School District
Xavier Hernandez-Delgado
5 Homeside Lane
White Plains, NY 10605

RE: Letter of Authorization (LOA) for Coverage Under
SPDES General Permit for Stormwater Discharges from Construction Activity (CGP)
General Permit No. GP-0-25-001

Dear Owner or Operator,

The New York State Department of Environmental Conservation (NYSDEC) received a complete electronic Notice of Intent (eNOI) for coverage under GP-0-25-001 for construction activities located at:

Project Name: White Plains High School Addition
Project Address: 550 North Street
White Plains, NY 10605 Project County: Westchester

Through submission of the eNOI on March 31, 2025, the owner or operator certified that the eligibility requirements in Part I.A. of GP-0-25-001 have been met, where required.

As a reminder, the owner or operator must meet the requirements in Part I.E.6. of GP-0-25-001 prior to disturbing greater than five acres of soil at any one time. Further, this LOA is not the permit document. The owner or operator is required to comply with all requirements in GP-0-25-001, which is accessible on NYSDEC's website: dec.ny.gov

The project is authorized to commence construction activity in accordance with Part I.D.3.b. of GP-0-25-001 as follows:

- Project Name: White Plains High School Addition
- eNOI Submission ID: HQB-CDPN-BD9XS
- Date authorized to commence construction activity: March 31, 2025

Note that the NYSDEC SPDES Permit Identification No. (SPDES Permit ID) for this project will be sent in a separate correspondence. Also, please be advised there is an annual regulatory fee of $110, which is billed by NYSDEC in the late fall. The regulatory fee covers a period of one calendar year. In addition, there is an initial authorization fee of $110 per acre of land disturbed and $675 per acre of future impervious area. The initial authorization fee covers the duration of the authorized disturbance.

If there are any questions regarding the requirements in GP-0-25-001, please contact me.

Sincerely,

John Muthersbaugh

John Muthersbaugh

Assistant Engineer

Division of Water, Bureau of Water Permits
625 Broadway, Albany, NY 12233 | dec.ny.gov | john.muthersbaugh@dec.ny.gov | (518) 402-8188

Appendix E

WQv, RRv, and SMP Worksheets Drainage Calculations

White Plains School District
White Plains High School Addition
H2M Job No.: WPSD2203
Stormwater Calculations

architects + engineers
2 Executive Boulevard, Ste 401
Suffern, NY 10901

Pre-Development Conditions (Total)

	Square Feet	Acres	CN Value
Total Area	125,650	2.88	
Grass - Good Condition	53,385	1.23	
Impervious	72,265	1.66	

*CN Values from TR-55

Post-Development Conditions (Total)

	Square Feet	Acres	CN Value
Total Area	125,650		
Grass - Good Condition	36,249		
Impervious	89,401		

*CN Values from TR-55

Pre-Development Conditions (WS#1)

	Square Feet	Acres	CN Value
Total Area	13,499	0.31	94
Grass - Good Condition	3,037	0.07	80
Impervious	10,462	0.24	98

*CN Values from TR-55

Post-Development Conditions (WS#1)

	Square Feet	Acres	CN Value
Total Area	12,018	0.28	96
Grass - Good Condition	1,434	0.03	80
Impervious	10,584	0.24	98

*CN Values from TR-55

Pre-Development Conditions (WS#2)

	Square Feet	Acres	CN Value
Total Area	112,151	2.57	88
Grass - Good Condition	50,348	1.16	77
Impervious	61,803	1.42	98

*CN Values from TR-55

Post-Development Conditions (WS#2A)

	Square Feet	Acres	CN Value
Total Area	59,486	1.37	93
Grass - Good Condition	19,579	0.45	74
Impervious	39,907	0.92	98

*CN Values from TR-55

Post-Development Conditions (WS#2B)

	Square Feet	Acres	CN Value
Total Area	54,146	1.24	90
Grass - Good Condition	15,236	0.35	74
Impervious	38,910	0.89	98

*CN Values from TR-55

White Plains School District

WPSD2203

WQv and RRv_{min}

H2M architects + engineers
2 Executive Boulevard, Ste 401
Suffern, NY 10901

WQv:		
P - 90% Rainfall Event Number	1.50	in
I - Percent Impervious Cover	34	%
Rv- Runoff Coefficient	0.36	
A - Contributing Area	1.72	acres
WQv	**0.077**	**ac-ft**
WQv	**3,359**	**ft^3**
RRv_{min} :		
S - HSG Reduction Factor	0.20	(HSG D)
Aic - Area of New Impervious Cover	0.40	acres
Rv- Runoff Coefficient (I = 100%)	0.95	
RRv_{min}	**0.010**	**ac-ft**
RRv_{min}	**414**	**ft^3**

WQv Provided (Infiltration Chambers:		
P - 90% Rainfall Event Number	1.50	in
I - Percent Impervious Cover	67	%
Rv- Runoff Coefficient	0.65	
A - Contributing Area	1.35	acres
WQv	**0.110**	**ac-ft**
WQv Contibuting Area	**4,800**	**ft^3**
WQv Detained in Chambers (per Hydraflow)	**3,396**	**ft^3**

Pretreatment Volume Calculation

Swale

Side Slopes	12	H:1V
Bottom Width	8	ft
Ponding Depth	0.75	ft
Length	270	lf
Area	12.8	ft^2
Volume Provided	3,443	ft^3
Volume Required	3,359	ft^3

Equations Used:
$RRv_{min} = \frac{P_{1yr} * \bar{R}_v * Aic * S}{12}$
$WQv = \frac{P * R_v * A}{12}$

WQv and RRv_{min} Summary Table:		
WQv Required (Total)	3,359	ft^3
WQv Provided (Total)	3,396	ft^3
RRv Required (Total)	414	ft^3
RRv Provided (Total)	3,396	ft^3

WPSD2203

Drainage Calculations for Proposed Drainage Improvements

Identification		Invert		Run	Slope	Dia.	A	R						
Down	Up	Down	Up	LF	FT/LF	IN	SF	FT	Mat'l	n	C_1	$S^{1/2}$	Q_{FULL}	V_{FULL}
DMH#1	CB#1	283.52	284.42	45	0.020	12	0.785	0.250	HDPE	0.010	46.08	0.1414	6.52	8.30
DMH#2	DMH#1	281.90	283.02	112	0.010	18	1.766	0.375	HDPE	0.010	136.04	0.1000	13.60	7.70
CB#2	DMH#2	280.92	281.80	59	0.0149	18	1.766	0.375	HDPE	0.010	136.04	0.1221	16.61	9.41
CB#3	CB#2	277.97	280.82	190	0.0150	18	1.766	0.375	HDPE	0.010	136.04	0.1225	16.66	9.43
CB#3	DMH#3	277.97	278.93	48	0.0200	18	1.766	0.375	HDPE	0.010	136.04	0.1414	19.24	10.89
DMH#3	DMH#4	279.03	282.57	177	0.0200	18	1.766	0.375	HDPE	0.010	136.04	0.1414	19.24	10.89
DMH#4	DMH#5	282.67	283.49	41	0.0200	18	1.766	0.375	HDPE	0.010	136.04	0.1414	19.24	10.89
DMH#5	DMH#6	283.59	284.11	26	0.0200	18	1.766	0.375	HDPE	0.010	136.04	0.1414	19.24	10.89
DMH#7	CB#3	277.25	277.87	8	0.0775	18	1.766	0.375	HDPE	0.010	136.04	0.2784	37.87	21.44
DMH#8	OCS #1	272.50	276.50	50	0.0800	18	1.766	0.375	HDPE	0.010	136.04	0.2828	38.48	21.79
CB#3	DMH#8	270.30	271.90	66	0.0242	18	1.766	0.375	HDPE	0.010	136.04	0.1557	21.18	11.99

Appendix F

Time of Concentration Worksheets
Hydraflow Hydrograph
and Design Storm Results

Watershed Model Schematic

Legend

Hyd.	Origin	Description
1	SCS Runoff	WS#1
2	SCS Runoff	WS#2

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)							Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	0.748	-------	-------	-------	1.480	-------	-------	2.604	WS#1
2	SCS Runoff	------	4.441	-------	-------	-------	9.837	-------	-------	18.17	WS#2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.748	2	724	2,326	------	------	------	WS#1
2	SCS Runoff	4.441	2	728	17,044	------	------	------	WS#2

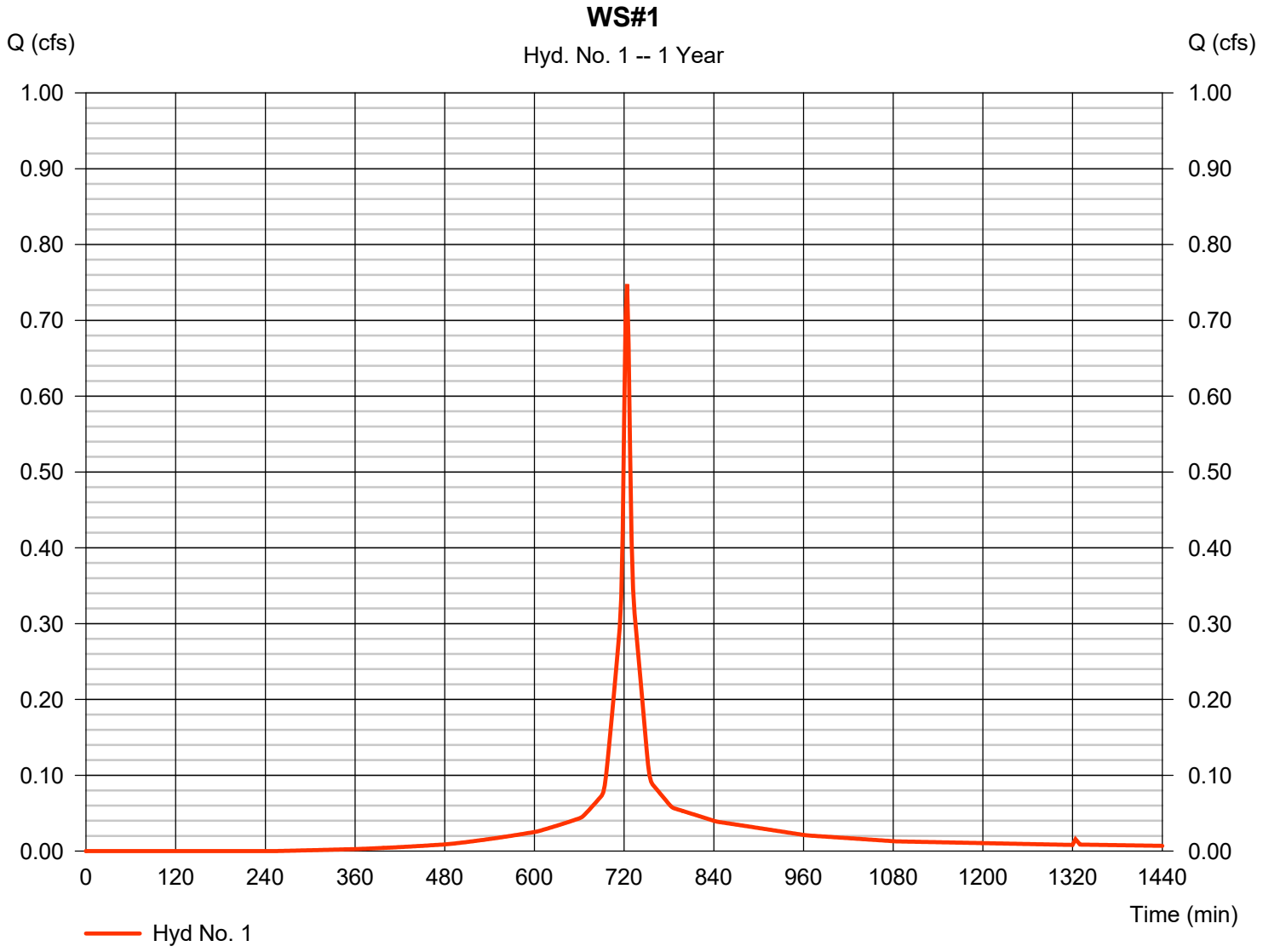
Hydrograph Report

Hyd. No. 1

WS#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.748 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 2,326 cuft
Drainage area	= 0.310 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.85 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.070 x 80) + (0.240 x 98)] / 0.310



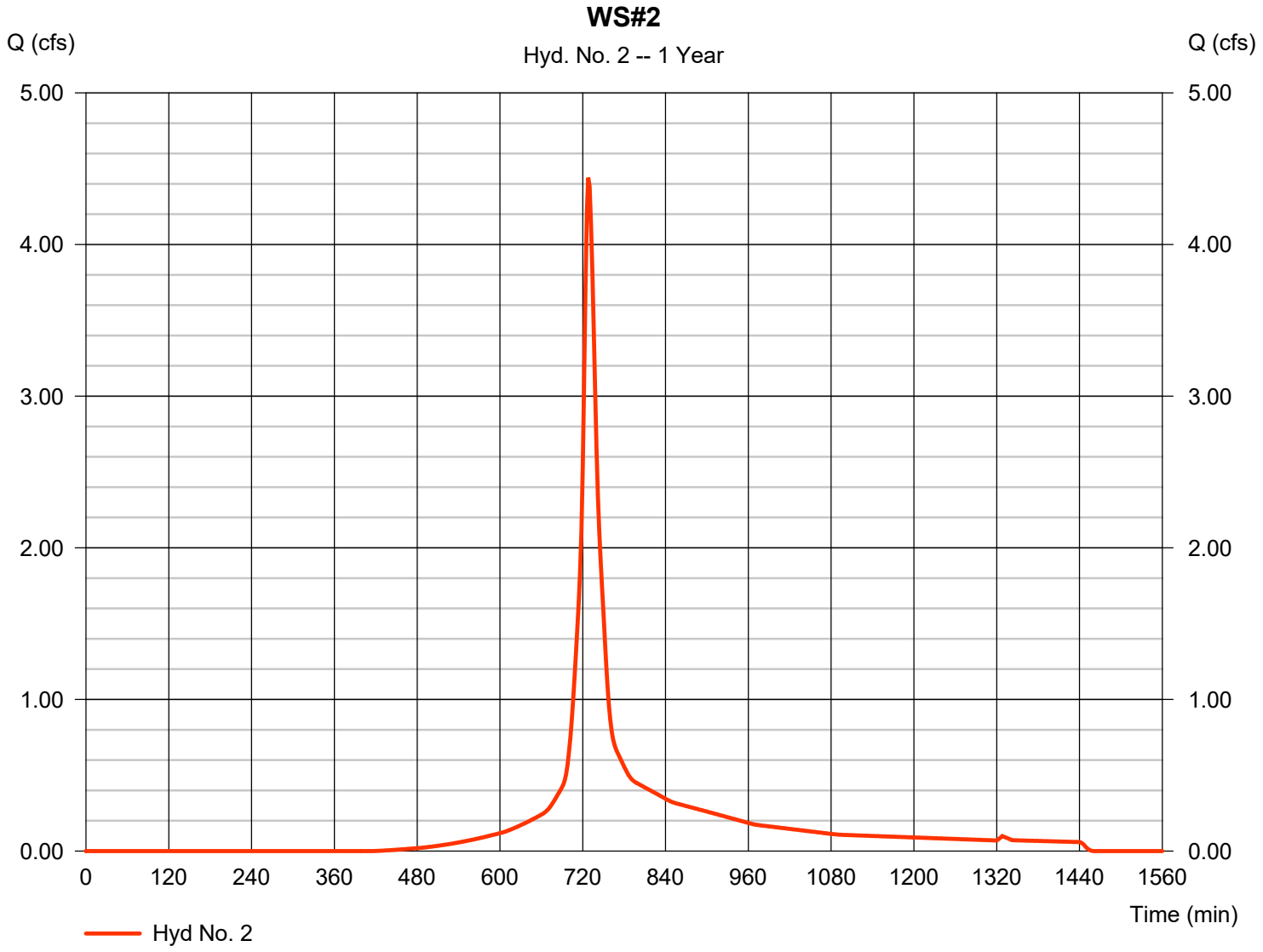
Hydrograph Report

Hyd. No. 2

WS#2

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.441 cfs
Storm frequency	=	1 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	17,044 cuft
Drainage area	=	2.580 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	11.00 min
Total precip.	=	2.85 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.160 x 77) + (1.420 x 98)] / 2.580



TR55 Tc Worksheet

Hyd. No. 2

WS#2

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		0.00		0.00		
Land slope (%)	= 5.70		0.00		0.00		
Travel Time (min)	**= 8.97**	**+**	**0.00**	**+**	**0.00**	**=**	**8.97**
Shallow Concentrated Flow							
Flow length (ft)	= 13.80		89.00		182.00		
Watercourse slope (%)	= 2.00		3.75		1.84		
Surface description	= Paved		Unpaved		Paved		
Average velocity (ft/s)	=2.87		3.12		2.76		
Travel Time (min)	**= 0.08**	**+**	**0.47**	**+**	**1.10**	**=**	**1.65**
Channel Flow							
X sectional flow area (sqft)	= 0.55		0.20		0.00		
Wetted perimeter (ft)	= 2.62		1.57		0.00		
Channel slope (%)	= 4.30		1.00		0.00		
Manning's n-value	= 0.013		0.010		0.015		
Velocity (ft/s)	=8.30		3.70		0.00		
Flow length (ft)	({0})46.0		67.0		0.0		
Travel Time (min)	**= 0.09**	**+**	**0.30**	**+**	**0.00**	**=**	**0.39**

Total Travel Time, Tc ..... 11.00 min

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.480	2	724	4,805	------	------	------	WS#1
2	SCS Runoff	9.837	2	728	38,745	------	------	------	WS#2

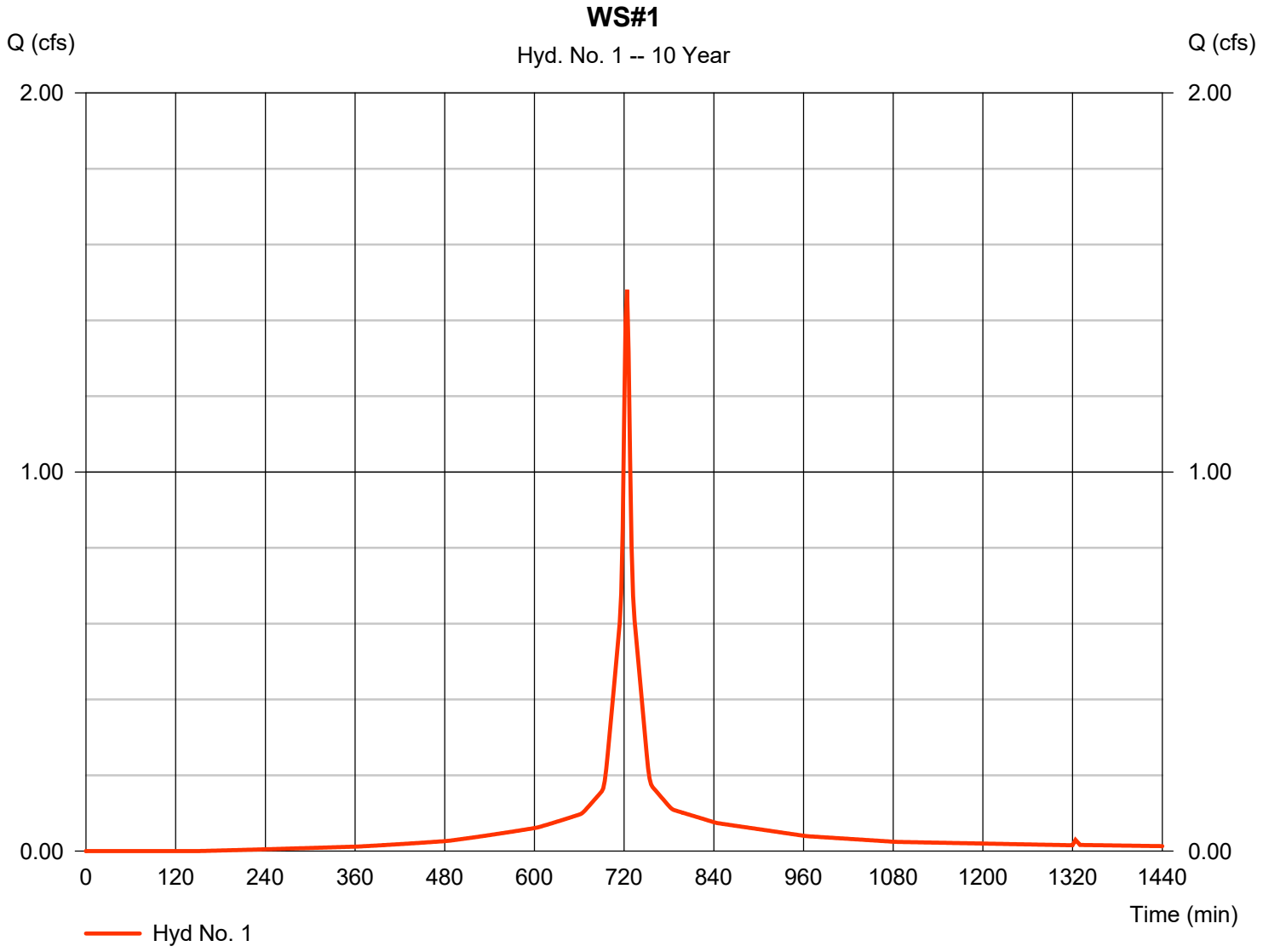
Hydrograph Report

Hyd. No. 1

WS#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.480 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	4,805 cuft
Drainage area	=	0.310 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.25 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.240 x 98)] / 0.310



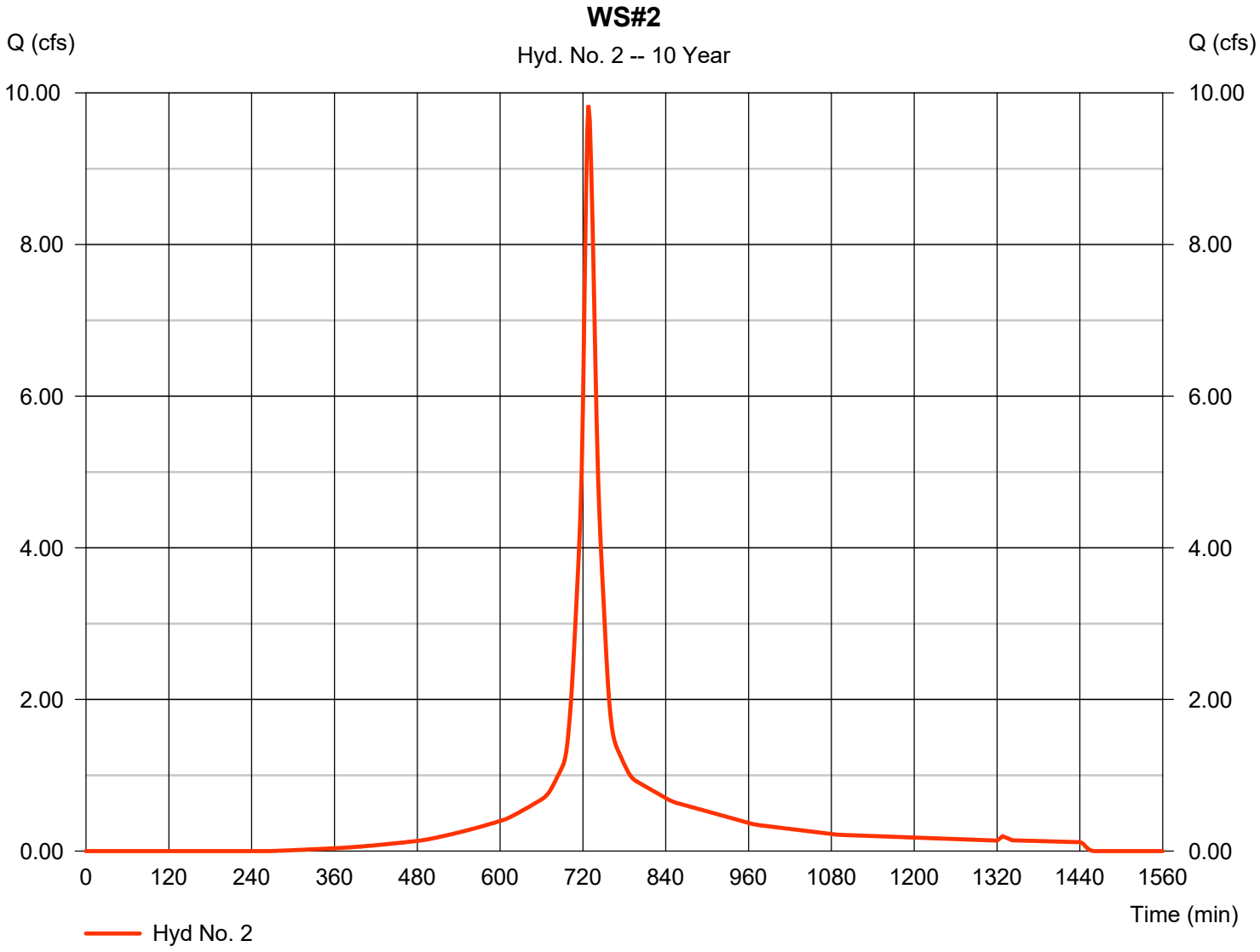
Hydrograph Report

Hyd. No. 2

WS#2

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.837 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	38,745 cuft
Drainage area	=	2.580 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	11.00 min
Total precip.	=	5.25 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.160 x 77) + (1.420 x 98)] / 2.580



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.604	2	724	8,732	------	------	------	WS#1
2	SCS Runoff	18.17	2	728	74,075	------	------	------	WS#2

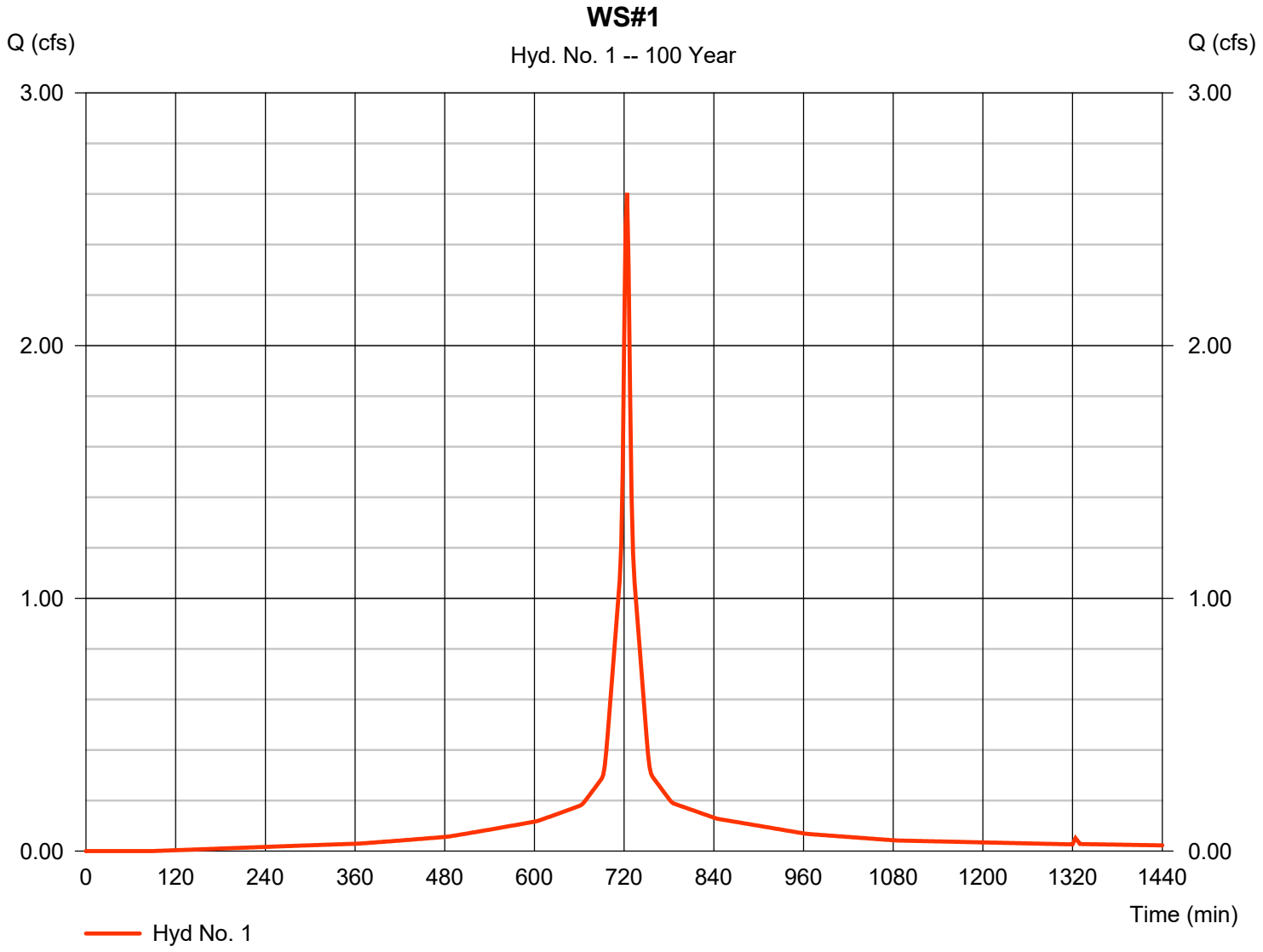
Hydrograph Report

Hyd. No. 1

WS#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.604 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	8,732 cuft
Drainage area	=	0.310 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.070 x 80) + (0.240 x 98)] / 0.310



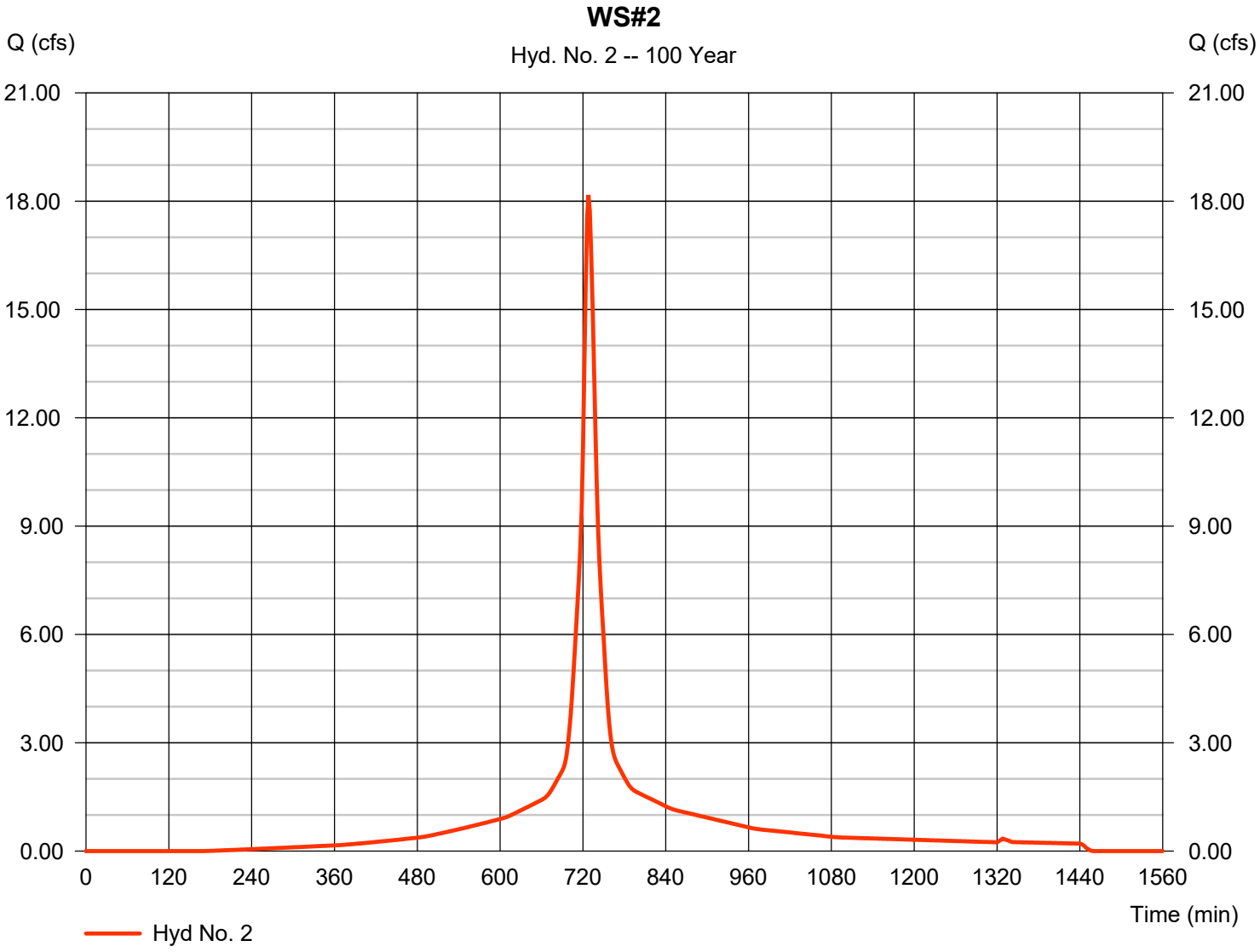
Hydrograph Report

Hyd. No. 2

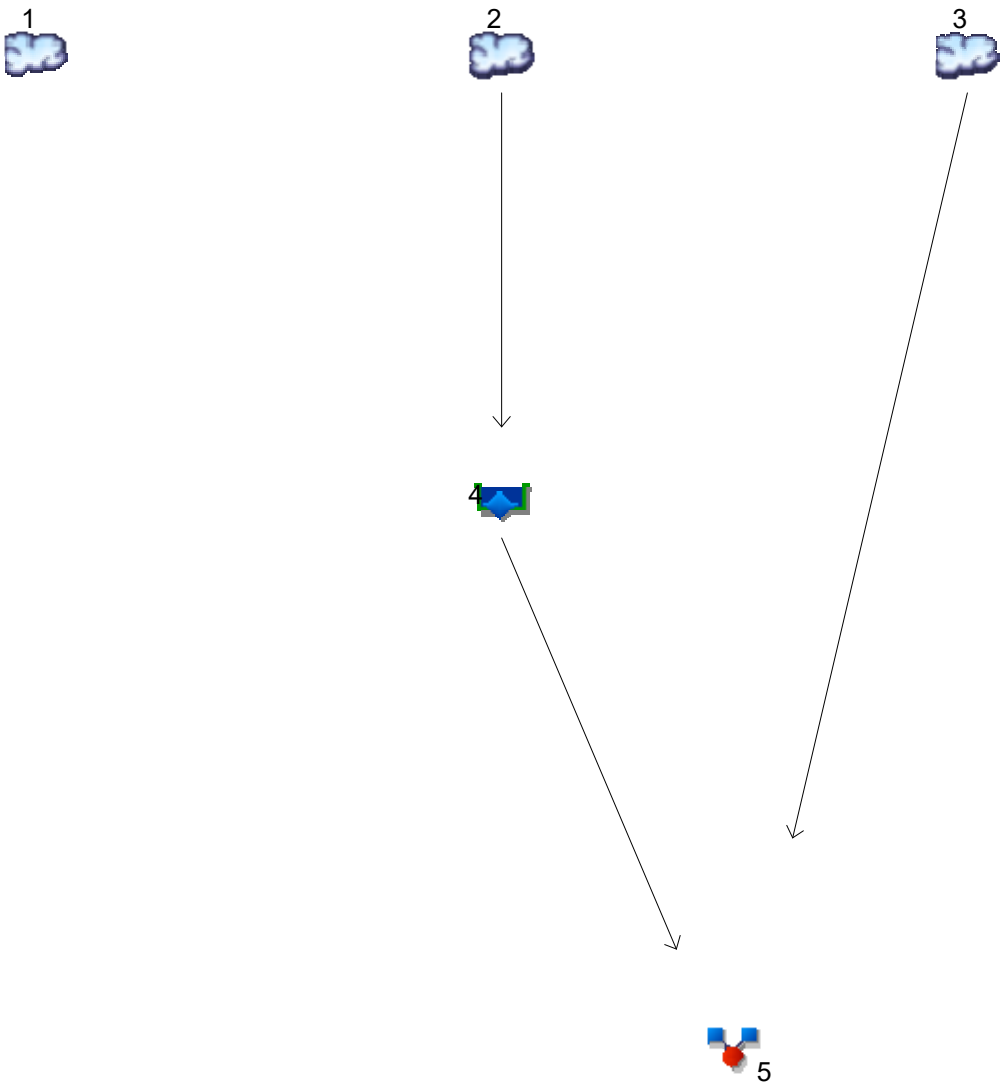
WS#2

Hydrograph type	=	SCS Runoff	Peak discharge	=	18.17 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	74,075 cuft
Drainage area	=	2.580 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	11.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.160 x 77) + (1.420 x 98)] / 2.580



Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	WS#1
2	SCS Runoff	WS#2A
3	SCS Runoff	WS#2B
4	Reservoir	Route to MC-3500
5	Combine	Combine to Study Point 2

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)							Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	0.689	-------	-------	-------	1.318	-------	-------	2.288	WS#1
2	SCS Runoff	------	2.462	-------	-------	-------	5.327	-------	-------	9.737	WS#2A
3	SCS Runoff	------	2.521	-------	-------	-------	5.321	-------	-------	9.617	WS#2B
4	Reservoir	2	0.586	-------	-------	-------	4.449	-------	-------	9.202	Route to MC-3500
5	Combine	3, 4	2.521	-------	-------	-------	8.454	-------	-------	17.98	Combine to Study Point 2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.689	2	724	2,209	------	------	------	WS#1
2	SCS Runoff	2.462	2	728	9,472	------	------	------	WS#2A
3	SCS Runoff	2.521	2	726	8,696	------	------	------	WS#2B
4	Reservoir	0.586	2	752	1,539	2	279.50	3,889	Route to MC-3500
5	Combine	2.521	2	726	10,235	3, 4	------	------	Combine to Study Point 2

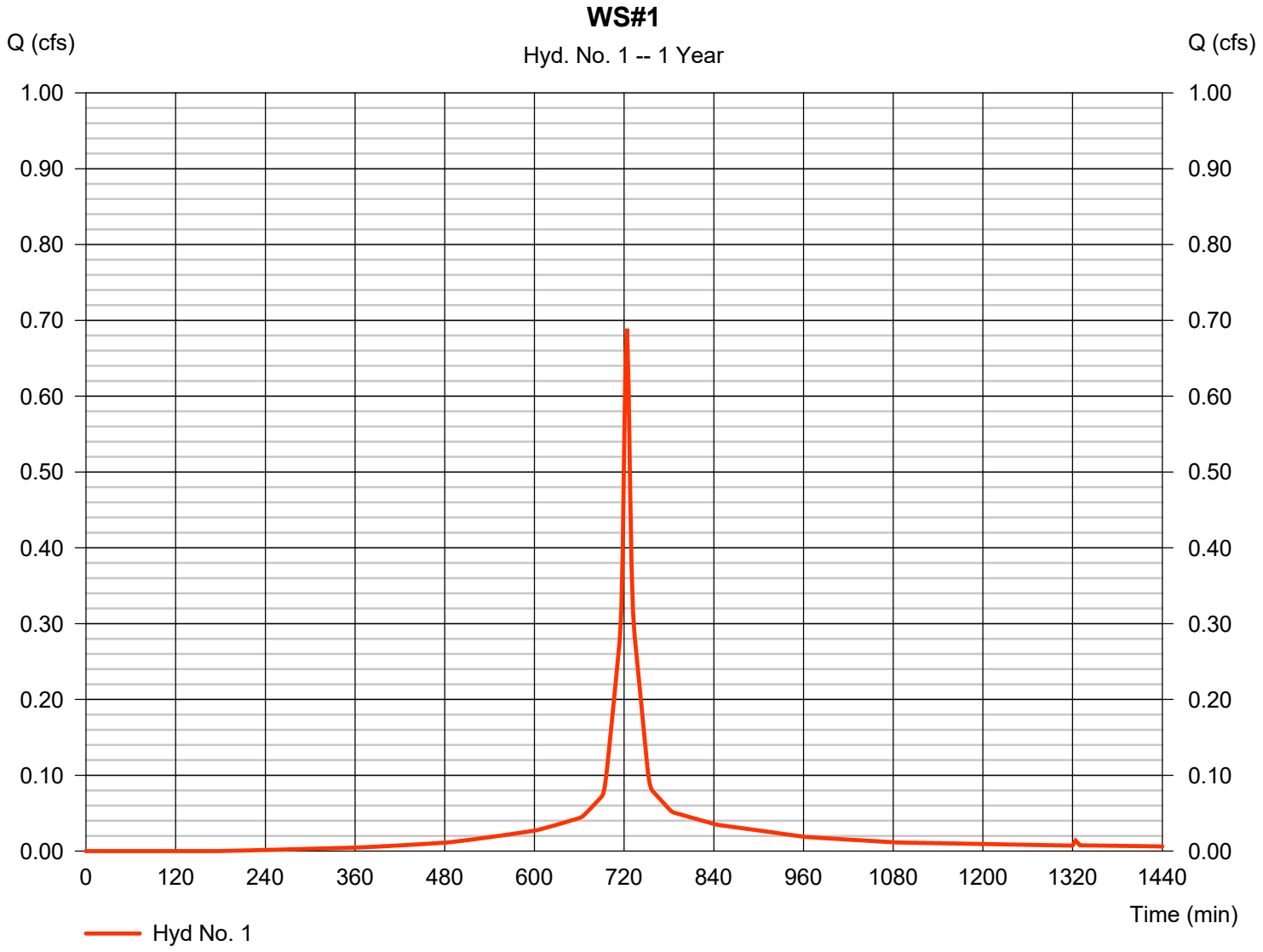
Hydrograph Report

Hyd. No. 1

WS#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.689 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	2,209 cuft
Drainage area	=	0.270 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.85 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.030 x 80) + (0.240 x 98)] / 0.270



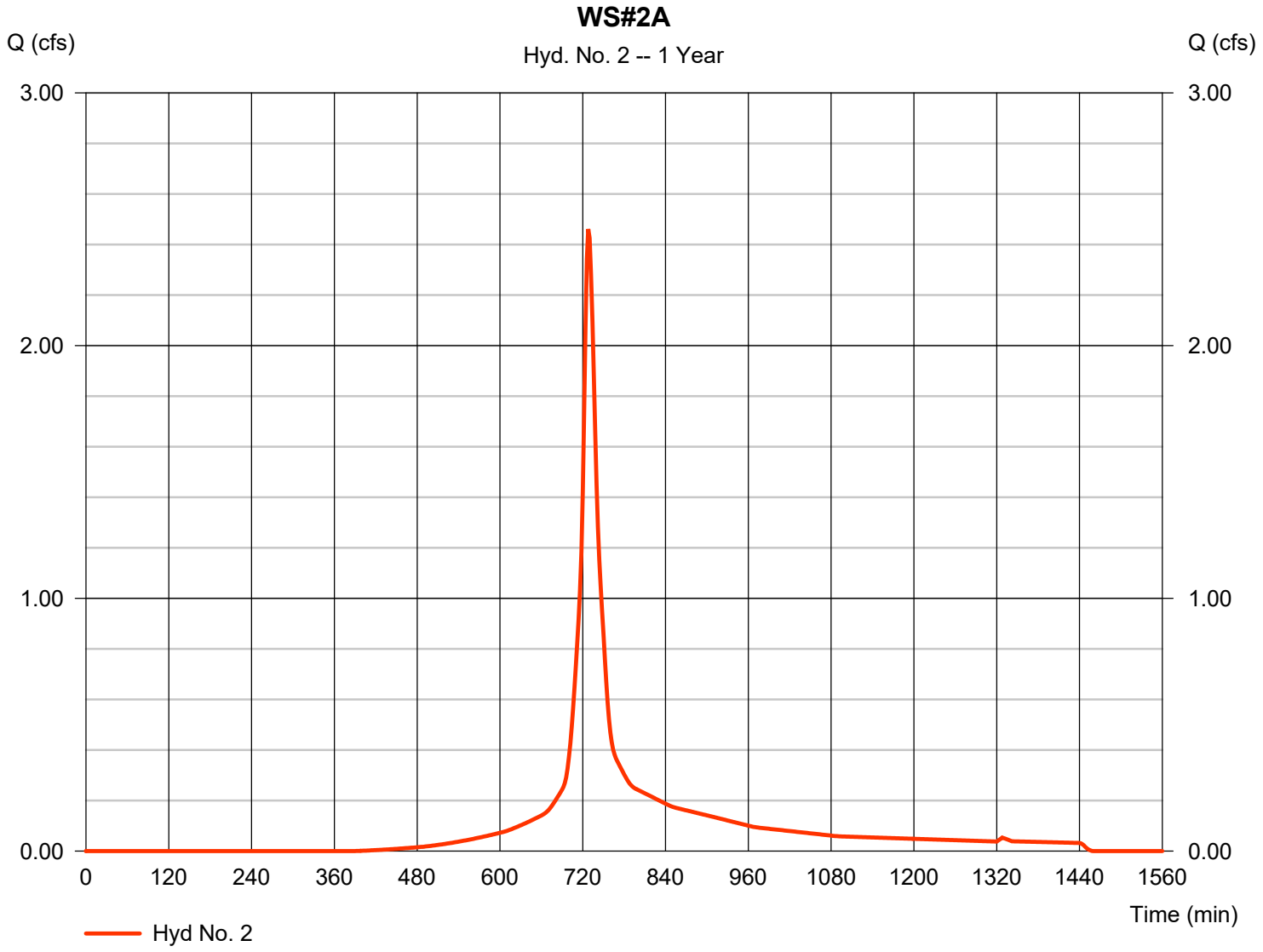
Hydrograph Report

Hyd. No. 2

WS#2A

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.462 cfs
Storm frequency	=	1 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	9,472 cuft
Drainage area	=	1.370 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.00 min
Total precip.	=	2.85 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.450 x 74) + (0.920 x 98)] / 1.370



TR55 Tc Worksheet

Hyd. No. 2

WS#2A

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		0.00		0.00		
Land slope (%)	= 2.46		0.00		0.00		
Travel Time (min)	**= 12.56**	**+**	**0.00**	**+**	**0.00**	**=**	**12.56**
Shallow Concentrated Flow							
Flow length (ft)	= 70.00		0.00		0.00		
Watercourse slope (%)	= 4.40		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.38		0.00		0.00		
Travel Time (min)	**= 0.34**	**+**	**0.00**	**+**	**0.00**	**=**	**0.34**
Channel Flow							
X sectional flow area (sqft)	= 1.76		0.00		0.00		
Wetted perimeter (ft)	= 4.71		0.00		0.00		
Channel slope (%)	= 2.00		0.00		0.00		
Manning's n-value	= 0.010		0.015		0.015		
Velocity (ft/s)	=10.90						
			0.00				
					0.00		
Flow length (ft)	({0})48.0		0.0		0.0		
Travel Time (min)	**= 0.07**	**+**	**0.00**	**+**	**0.00**	**=**	**0.07**

Total Travel Time, Tc ..... 13.00 min

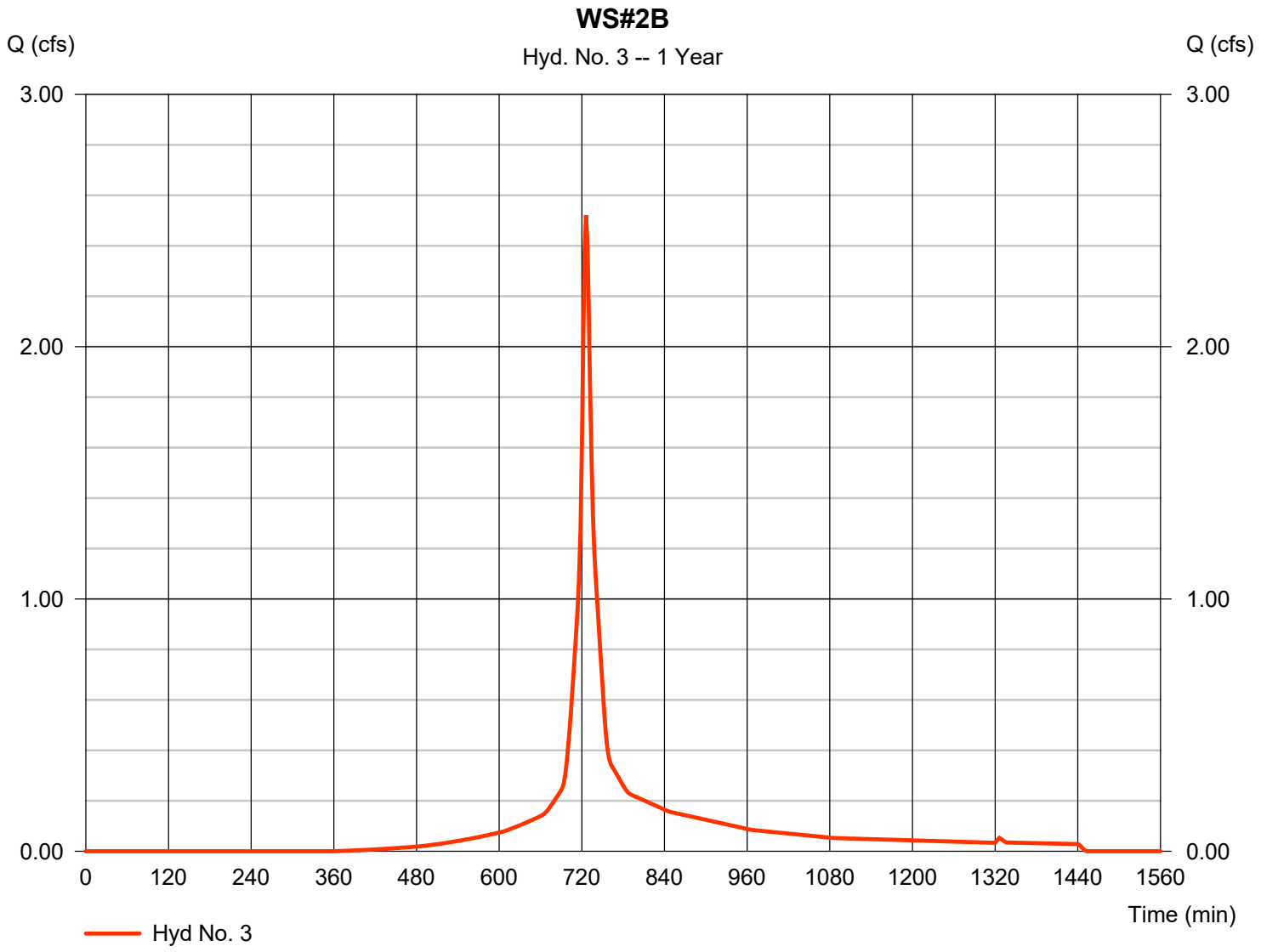
Hydrograph Report

Hyd. No. 3

WS#2B

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.521 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	8,696 cuft
Drainage area	=	1.240 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.70 min
Total precip.	=	2.85 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.350 x 74) + (0.890 x 98)] / 1.240



TR55 Tc Worksheet

Hyd. No. 3

WS#2B

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 56.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		0.00		0.00		
Land slope (%)	= 7.30		0.00		0.00		
Travel Time (min)	**= 5.11**	**+**	**0.00**	**+**	**0.00**	**=**	**5.11**
Shallow Concentrated Flow							
Flow length (ft)	= 233.00		0.00		0.00		
Watercourse slope (%)	= 1.44		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=2.44		0.00		0.00		
Travel Time (min)	**= 1.59**	**+**	**0.00**	**+**	**0.00**	**=**	**1.59**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 6.70 min

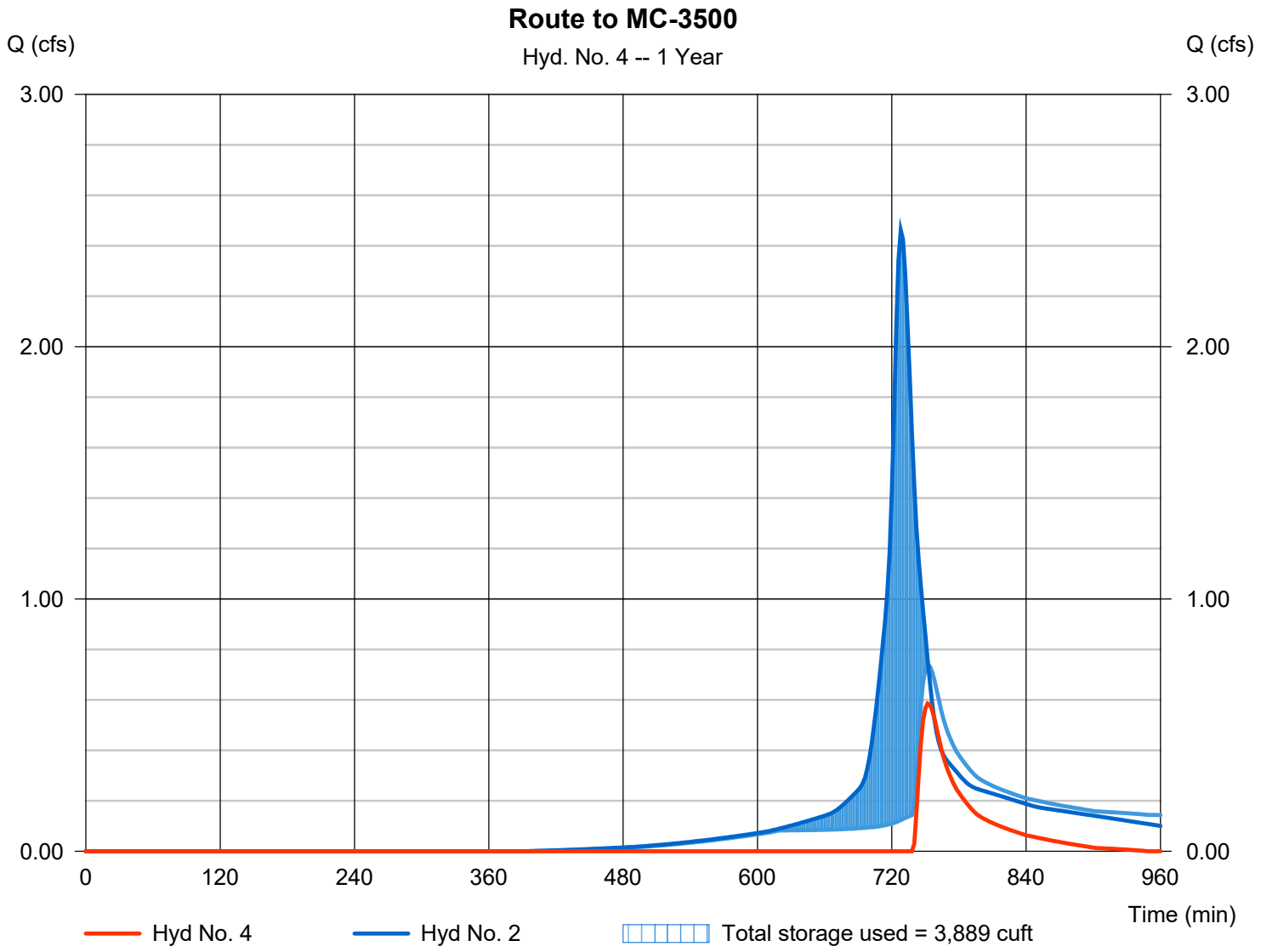
Hydrograph Report

Hyd. No. 4

Route to MC-3500

Hydrograph type	=	Reservoir	Peak discharge	=	0.586 cfs
Storm frequency	=	1 yrs	Time to peak	=	752 min
Time interval	=	2 min	Hyd. volume	=	1,539 cuft
Inflow hyd. No.	=	2 - WS#2A	Max. Elevation	=	279.50 ft
Reservoir name	=	MC-3500 Chambers	Max. Storage	=	3,889 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - MC-3500 Chambers

Pond Data

UG Chambers -Invert elev. = 277.25 ft, Rise x Span = 3.50 x 5.60 ft, Barrel Len = 7.12 ft, No. Barrels = 36, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 276.50 ft, Width = 6.85 ft, Height = 5.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	276.50	n/a	0	0
0.55	277.05	n/a	386	386
1.10	277.60	n/a	687	1,074
1.65	278.15	n/a	852	1,926
2.20	278.70	n/a	832	2,758
2.75	279.25	n/a	798	3,556
3.30	279.80	n/a	745	4,301
3.85	280.35	n/a	664	4,964
4.40	280.90	n/a	494	5,459
4.95	281.45	n/a	386	5,845
5.50	282.00	n/a	386	6,231

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	Inactive	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	2	1	0
Invert El. (ft)	= 276.75	279.15	0.00	0.00
Length (ft)	= 50.00	0.50	0.00	0.00
Slope (%)	= 8.00	0.50	0.00	n/a
N-Value	= .012	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.74	Inactive	0.00	0.00
Crest El. (ft)	= 280.15	280.90	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 2.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	276.50	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
0.05	39	276.55	0.00	0.00	---	---	0.00	0.00	---	---	0.083	---	0.083
0.11	77	276.61	0.00	0.00	---	---	0.00	0.00	---	---	0.084	---	0.084
0.17	116	276.67	0.00	0.00	---	---	0.00	0.00	---	---	0.085	---	0.085
0.22	155	276.72	0.00	0.00	---	---	0.00	0.00	---	---	0.087	---	0.087
0.28	193	276.77	0.00	0.00	---	---	0.00	0.00	---	---	0.088	---	0.088
0.33	232	276.83	0.00	0.00	---	---	0.00	0.00	---	---	0.089	---	0.089
0.38	270	276.88	0.00	0.00	---	---	0.00	0.00	---	---	0.090	---	0.090
0.44	309	276.94	0.00	0.00	---	---	0.00	0.00	---	---	0.092	---	0.092
0.50	348	276.99	0.00	0.00	---	---	0.00	0.00	---	---	0.093	---	0.093
0.55	386	277.05	0.00	0.00	---	---	0.00	0.00	---	---	0.094	---	0.094
0.61	455	277.11	0.00	0.00	---	---	0.00	0.00	---	---	0.096	---	0.096
0.66	524	277.16	0.00	0.00	---	---	0.00	0.00	---	---	0.097	---	0.097
0.71	593	277.21	0.00	0.00	---	---	0.00	0.00	---	---	0.098	---	0.098
0.77	661	277.27	0.00	0.00	---	---	0.00	0.00	---	---	0.100	---	0.100
0.82	730	277.33	0.00	0.00	---	---	0.00	0.00	---	---	0.101	---	0.101
0.88	799	277.38	0.00	0.00	---	---	0.00	0.00	---	---	0.102	---	0.102
0.94	867	277.43	0.00	0.00	---	---	0.00	0.00	---	---	0.103	---	0.103
0.99	936	277.49	0.00	0.00	---	---	0.00	0.00	---	---	0.105	---	0.105
1.04	1,005	277.54	0.00	0.00	---	---	0.00	0.00	---	---	0.106	---	0.106
1.10	1,074	277.60	0.00	0.00	---	---	0.00	0.00	---	---	0.107	---	0.107
1.15	1,159	277.65	0.00	0.00	---	---	0.00	0.00	---	---	0.109	---	0.109
1.21	1,244	277.71	0.00	0.00	---	---	0.00	0.00	---	---	0.110	---	0.110
1.26	1,329	277.77	0.00	0.00	---	---	0.00	0.00	---	---	0.111	---	0.111
1.32	1,414	277.82	0.00	0.00	---	---	0.00	0.00	---	---	0.113	---	0.113
1.38	1,500	277.88	0.00	0.00	---	---	0.00	0.00	---	---	0.114	---	0.114
1.43	1,585	277.93	0.00	0.00	---	---	0.00	0.00	---	---	0.115	---	0.115
1.49	1,670	277.98	0.00	0.00	---	---	0.00	0.00	---	---	0.117	---	0.117
1.54	1,755	278.04	0.00	0.00	---	---	0.00	0.00	---	---	0.118	---	0.118
1.60	1,840	278.09	0.00	0.00	---	---	0.00	0.00	---	---	0.119	---	0.119
1.65	1,926	278.15	0.00	0.00	---	---	0.00	0.00	---	---	0.120	---	0.120
1.71	2,009	278.20	0.00	0.00	---	---	0.00	0.00	---	---	0.122	---	0.122

Continues on next page...

MC-3500 Chambers

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.76	2,092	278.26	0.00	0.00	---	---	0.00	0.00	---	---	0.123	---	0.123
1.82	2,175	278.32	0.00	0.00	---	---	0.00	0.00	---	---	0.124	---	0.124
1.87	2,259	278.37	0.00	0.00	---	---	0.00	0.00	---	---	0.126	---	0.126
1.92	2,342	278.42	0.00	0.00	---	---	0.00	0.00	---	---	0.127	---	0.127
1.98	2,425	278.48	0.00	0.00	---	---	0.00	0.00	---	---	0.128	---	0.128
2.04	2,508	278.53	0.00	0.00	---	---	0.00	0.00	---	---	0.130	---	0.130
2.09	2,591	278.59	0.00	0.00	---	---	0.00	0.00	---	---	0.131	---	0.131
2.14	2,675	278.64	0.00	0.00	---	---	0.00	0.00	---	---	0.132	---	0.132
2.20	2,758	278.70	0.00	0.00	---	---	0.00	0.00	---	---	0.133	---	0.133
2.26	2,838	278.76	0.00	0.00	---	---	0.00	0.00	---	---	0.135	---	0.135
2.31	2,917	278.81	0.00	0.00	---	---	0.00	0.00	---	---	0.136	---	0.136
2.37	2,997	278.86	0.00	0.00	---	---	0.00	0.00	---	---	0.137	---	0.137
2.42	3,077	278.92	0.00	0.00	---	---	0.00	0.00	---	---	0.139	---	0.139
2.47	3,157	278.98	0.00	0.00	---	---	0.00	0.00	---	---	0.140	---	0.140
2.53	3,236	279.03	0.00	0.00	---	---	0.00	0.00	---	---	0.141	---	0.141
2.59	3,316	279.08	0.00	0.00	---	---	0.00	0.00	---	---	0.143	---	0.143
2.64	3,396	279.14	0.00	0.00	---	---	0.00	0.00	---	---	0.144	---	0.144
2.70	3,476	279.19	0.01 ic	0.01 ic	---	---	0.00	0.00	---	---	0.145	---	0.158
2.75	3,556	279.25	0.06 ic	0.06 ic	---	---	0.00	0.00	---	---	0.147	---	0.209
2.81	3,630	279.30	0.14 ic	0.14 ic	---	---	0.00	0.00	---	---	0.148	---	0.291
2.86	3,705	279.36	0.25 ic	0.25 ic	---	---	0.00	0.00	---	---	0.149	---	0.395
2.91	3,779	279.42	0.38 ic	0.37 ic	---	---	0.00	0.00	---	---	0.150	---	0.522
2.97	3,854	279.47	0.52 ic	0.52 ic	---	---	0.00	0.00	---	---	0.152	---	0.669
3.03	3,928	279.52	0.69 ic	0.66 ic	---	---	0.00	0.00	---	---	0.153	---	0.816
3.08	4,003	279.58	0.81 ic	0.81 ic	---	---	0.00	0.00	---	---	0.154	---	0.960
3.13	4,077	279.63	0.93 ic	0.92 ic	---	---	0.00	0.00	---	---	0.156	---	1.079
3.19	4,152	279.69	1.02 ic	1.02 ic	---	---	0.00	0.00	---	---	0.157	---	1.175
3.25	4,226	279.74	1.11 ic	1.11 ic	---	---	0.00	0.00	---	---	0.158	---	1.269
3.30	4,301	279.80	1.21 ic	1.20 ic	---	---	0.00	0.00	---	---	0.160	---	1.355
3.36	4,367	279.86	1.31 ic	1.28 ic	---	---	0.00	0.00	---	---	0.161	---	1.436
3.41	4,434	279.91	1.37 ic	1.35 ic	---	---	0.00	0.00	---	---	0.162	---	1.512
3.46	4,500	279.96	1.42 ic	1.42 ic	---	---	0.00	0.00	---	---	0.164	---	1.585
3.52	4,566	280.02	1.49 ic	1.49 ic	---	---	0.00	0.00	---	---	0.165	---	1.653
3.58	4,633	280.08	1.59 ic	1.55 ic	---	---	0.00	0.00	---	---	0.166	---	1.719
3.63	4,699	280.13	1.65 ic	1.62 ic	---	---	0.00	0.00	---	---	0.167	---	1.783
3.68	4,765	280.18	1.71 ic	1.67 ic	---	---	0.02	0.00	---	---	0.169	---	1.860
3.74	4,832	280.24	1.84 ic	1.73 ic	---	---	0.07	0.00	---	---	0.170	---	1.969
3.80	4,898	280.29	1.97 ic	1.79 ic	---	---	0.14	0.00	---	---	0.171	---	2.096
3.85	4,964	280.35	2.10 ic	1.84 ic	---	---	0.22	0.00	---	---	0.173	---	2.236
3.90	5,014	280.40	2.23 ic	1.90 ic	---	---	0.32	0.00	---	---	0.174	---	2.387
3.96	5,063	280.46	2.37 ic	1.95 ic	---	---	0.43	0.00	---	---	0.175	---	2.547
4.01	5,113	280.52	2.58 ic	2.00 ic	---	---	0.54	0.00	---	---	0.177	---	2.716
4.07	5,162	280.57	2.73 ic	2.05 ic	---	---	0.67	0.00	---	---	0.178	---	2.894
4.13	5,212	280.63	2.90 ic	2.09 ic	---	---	0.81	0.00	---	---	0.179	---	3.078
4.18	5,261	280.68	3.11 ic	2.14 ic	---	---	0.95	0.00	---	---	0.180	---	3.270
4.23	5,310	280.73	3.33 ic	2.18 ic	---	---	1.10	0.00	---	---	0.182	---	3.469
4.29	5,360	280.79	3.49 ic	2.23 ic	---	---	1.26	0.00	---	---	0.183	---	3.673
4.34	5,409	280.84	3.72 ic	2.27 ic	---	---	1.43	0.00	---	---	0.184	---	3.884
4.40	5,459	280.90	3.96 ic	2.32 ic	---	---	1.60	0.00	---	---	0.186	---	4.102
4.45	5,497	280.95	4.19 ic	2.36 ic	---	---	1.78	0.00	---	---	0.187	---	4.324
4.51	5,536	281.01	4.36 ic	2.40 ic	---	---	1.97	0.00	---	---	0.188	---	4.553
4.57	5,575	281.07	4.65 ic	2.44 ic	---	---	2.16	0.00	---	---	0.190	---	4.786
4.62	5,613	281.12	4.87 ic	2.48 ic	---	---	2.35	0.00	---	---	0.191	---	5.025
4.67	5,652	281.17	5.09 ic	2.52 ic	---	---	2.56	0.00	---	---	0.192	---	5.268
4.73	5,691	281.23	5.37 ic	2.56 ic	---	---	2.77	0.00	---	---	0.194	---	5.516
4.78	5,729	281.28	5.58 ic	2.60 ic	---	---	2.98	0.00	---	---	0.195	---	5.770
4.84	5,768	281.34	5.83 ic	2.63 ic	---	---	3.20	0.00	---	---	0.196	---	6.028
4.89	5,806	281.39	6.11 ic	2.67 ic	---	---	3.42	0.00	---	---	0.197	---	6.291
4.95	5,845	281.45	6.38 ic	2.71 ic	---	---	3.65	0.00	---	---	0.199	---	6.558
5.01	5,884	281.51	6.65 ic	2.74 ic	---	---	3.89	0.00	---	---	0.200	---	6.830
5.06	5,922	281.56	6.91 ic	2.78 ic	---	---	4.13	0.00	---	---	0.201	---	7.106
5.11	5,961	281.61	7.19 ic	2.81 ic	---	---	4.37	0.00	---	---	0.203	---	7.386
5.17	6,000	281.67	7.47 ic	2.85 ic	---	---	4.62	0.00	---	---	0.204	---	7.670
5.22	6,038	281.73	7.75 ic	2.88 ic	---	---	4.87	0.00	---	---	0.205	---	7.959
5.28	6,077	281.78	8.05 ic	2.92 ic	---	---	5.13	0.00	---	---	0.207	---	8.251
5.33	6,116	281.83	8.34 ic	2.95 ic	---	---	5.39	0.00	---	---	0.208	---	8.548
5.39	6,154	281.89	8.64 ic	2.98 ic	---	---	5.66	0.00	---	---	0.209	---	8.849
5.44	6,193	281.94	8.94 ic	3.02 ic	---	---	5.93	0.00	---	---	0.211	---	9.152
5.50	6,231	282.00	9.25 ic	3.05 ic	---	---	6.20	0.00	---	---	0.212	---	9.461

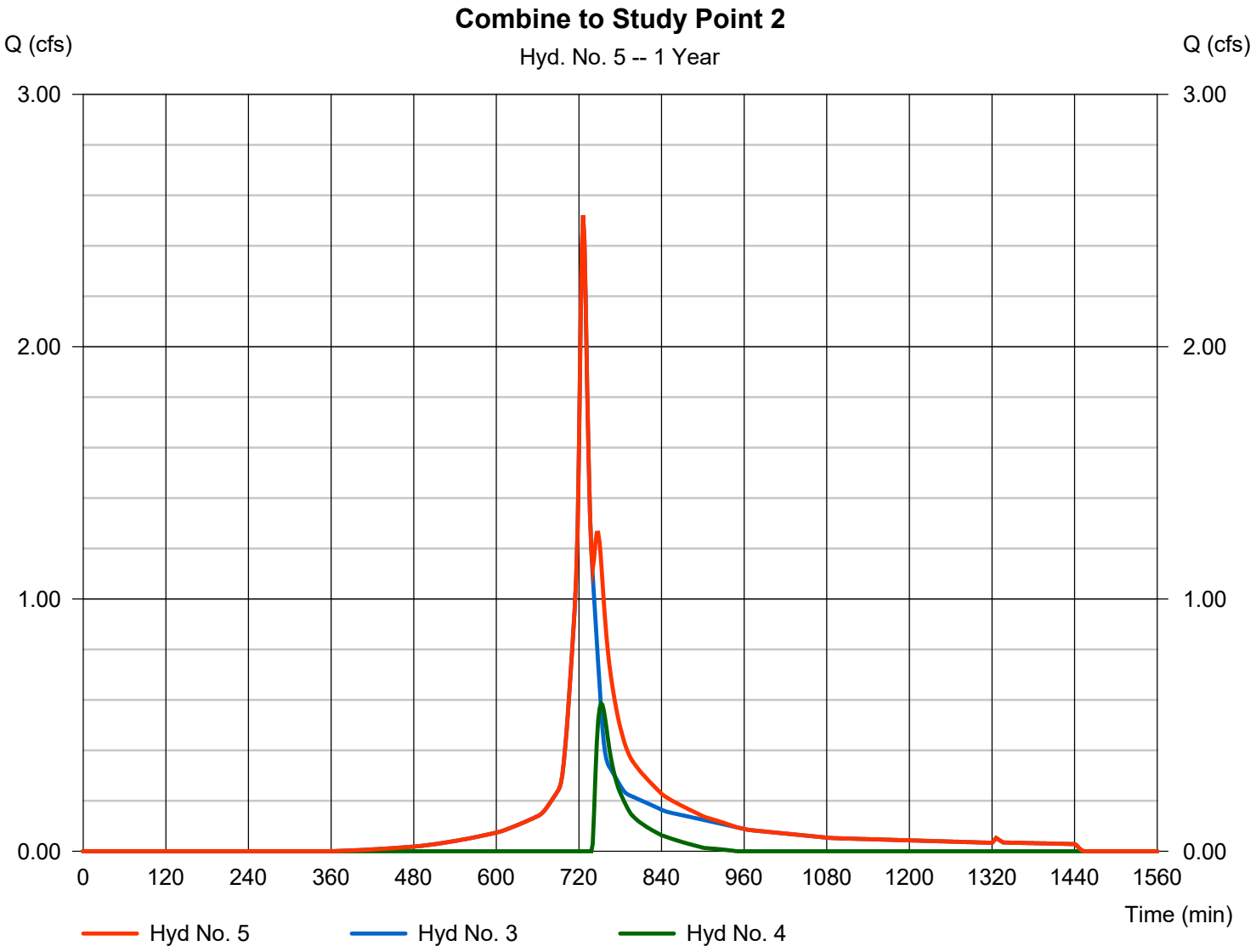
...End

Hydrograph Report

Hyd. No. 5

Combine to Study Point 2

Hydrograph type	=	Combine	Peak discharge	=	2.521 cfs
Storm frequency	=	1 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	10,235 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	1.240 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.318	2	724	4,393	------	------	------	WS#1
2	SCS Runoff	5.327	2	728	21,118	------	------	------	WS#2A
3	SCS Runoff	5.321	2	726	19,018	------	------	------	WS#2B
4	Reservoir	4.449	2	734	10,652	2	281.03	5,550	Route to MC-3500
5	Combine	8.454	2	730	29,670	3, 4	------	------	Combine to Study Point 2

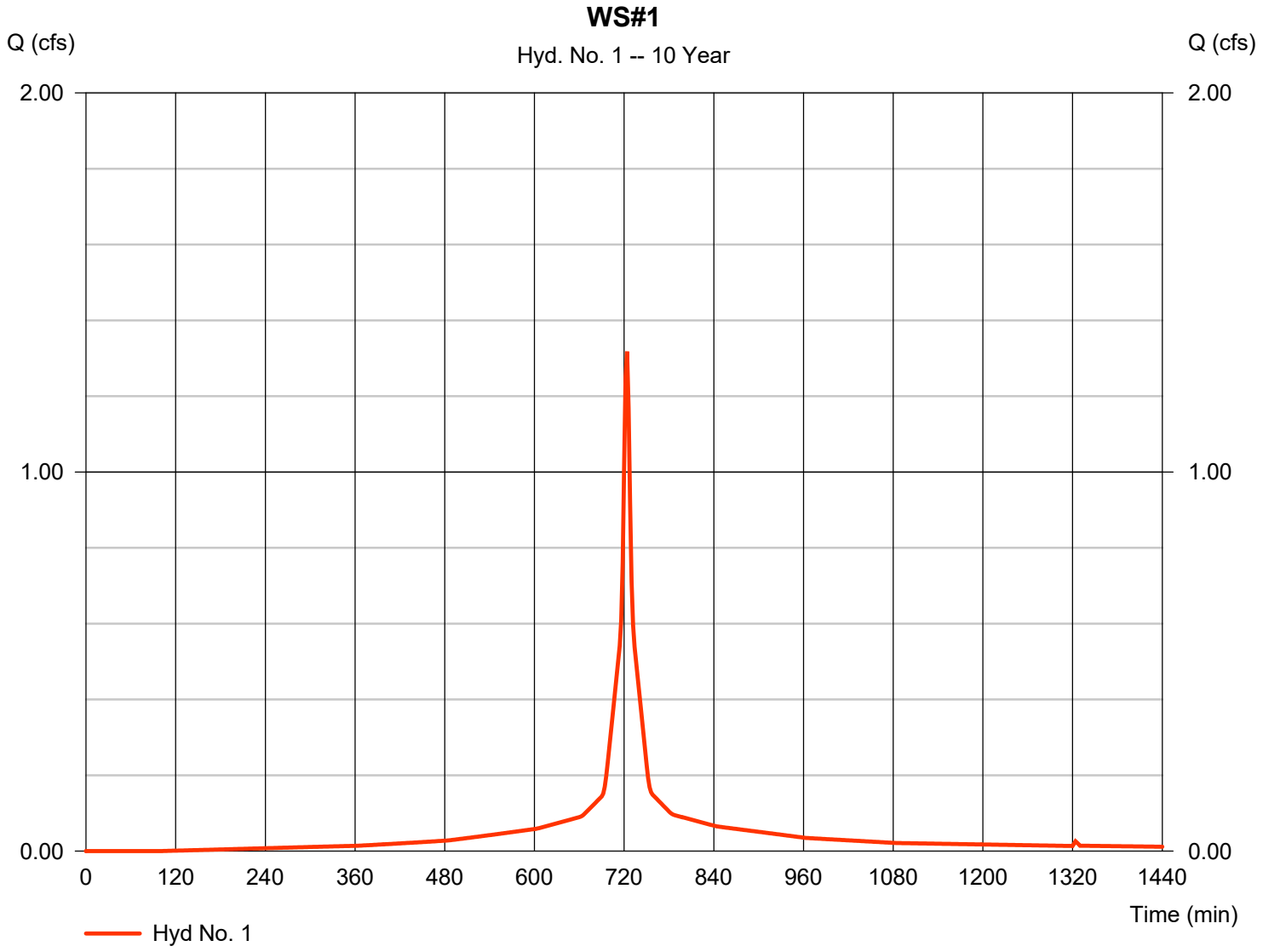
Hydrograph Report

Hyd. No. 1

WS#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.318 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	4,393 cuft
Drainage area	=	0.270 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.25 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.030 x 80) + (0.240 x 98)] / 0.270



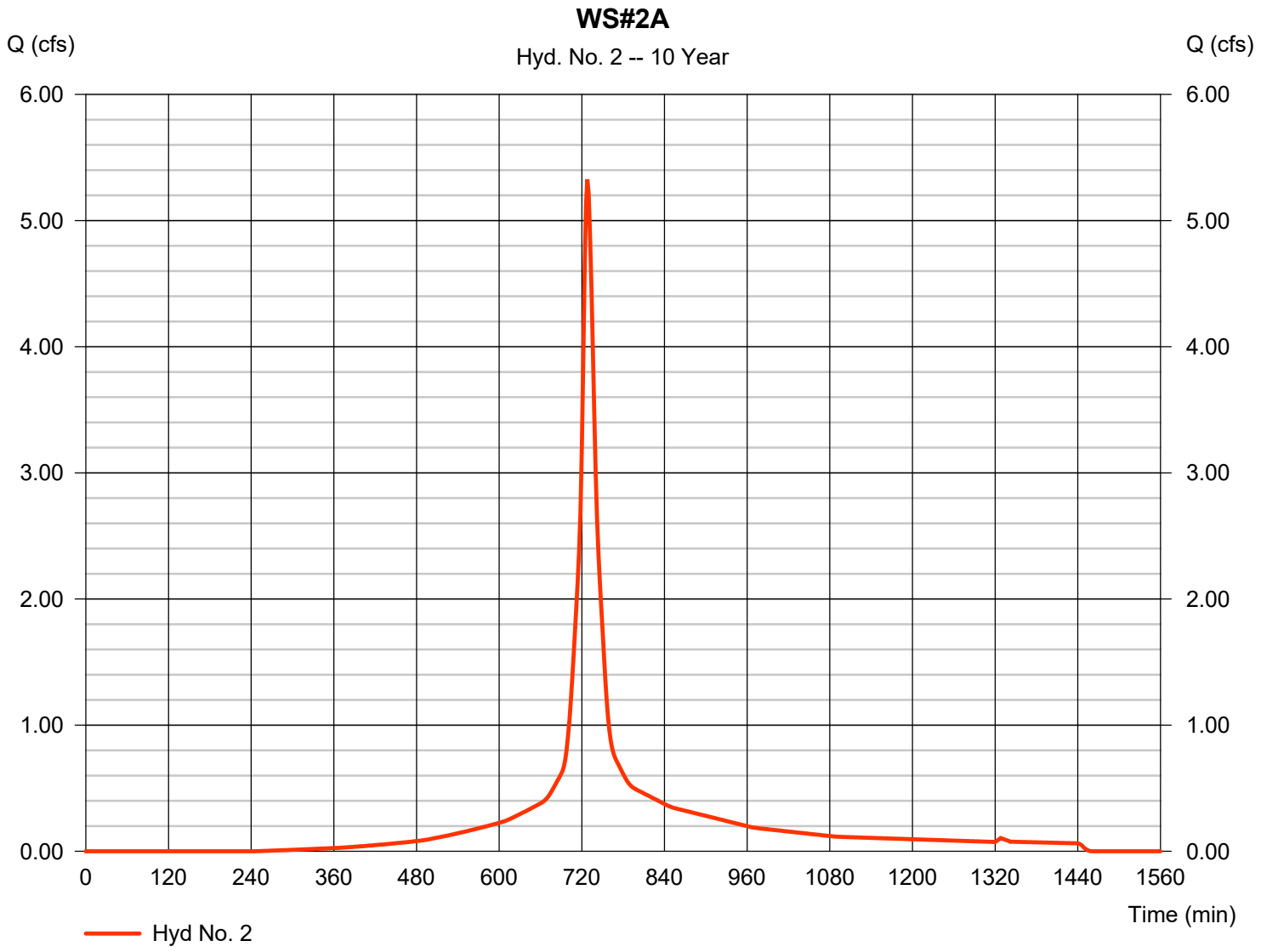
Hydrograph Report

Hyd. No. 2

WS#2A

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.327 cfs
Storm frequency	=	10 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	21,118 cuft
Drainage area	=	1.370 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.00 min
Total precip.	=	5.25 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.450 x 74) + (0.920 x 98)] / 1.370



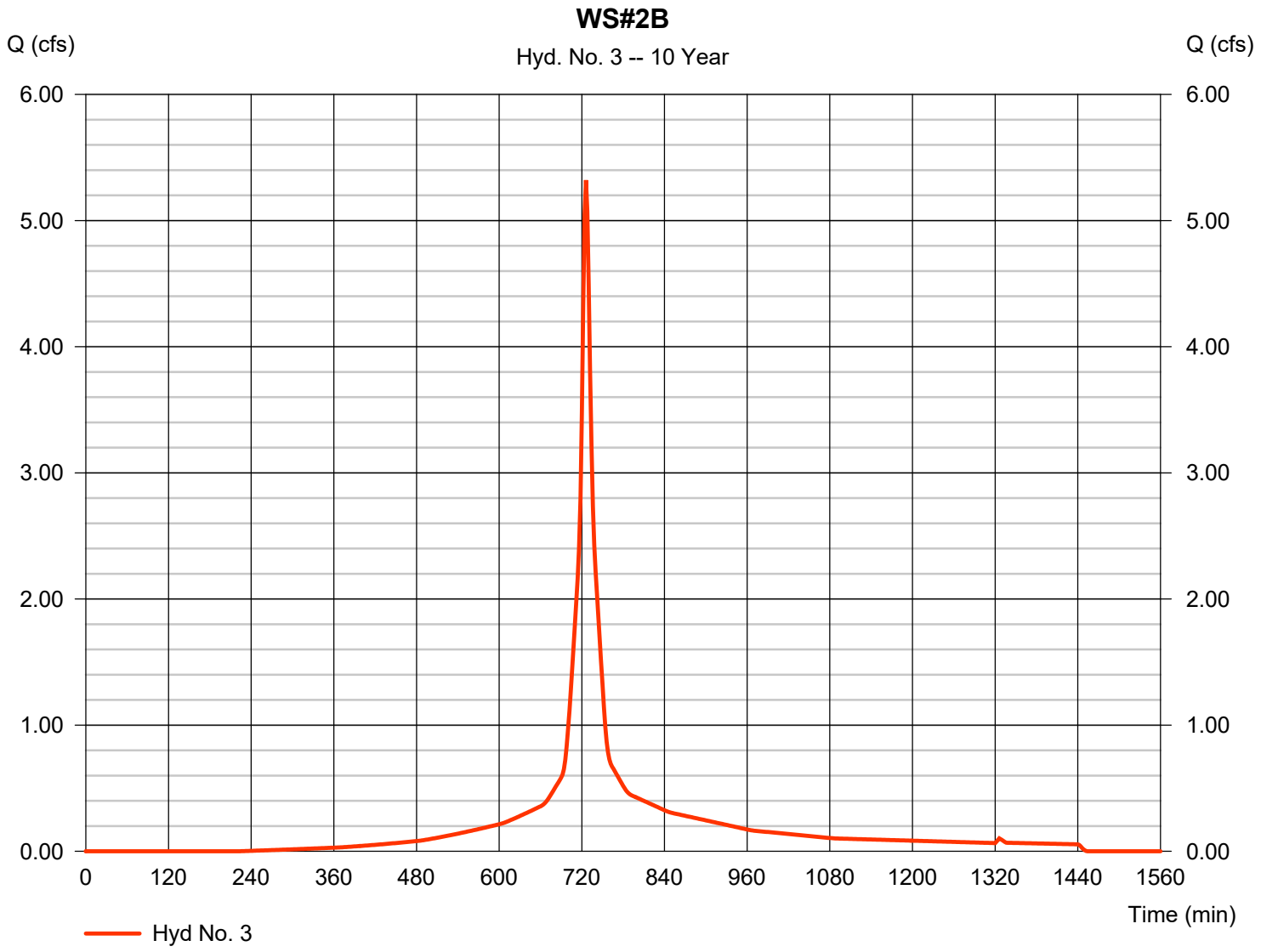
Hydrograph Report

Hyd. No. 3

WS#2B

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.321 cfs
Storm frequency	=	10 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	19,018 cuft
Drainage area	=	1.240 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.70 min
Total precip.	=	5.25 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.350 x 74) + (0.890 x 98)] / 1.240



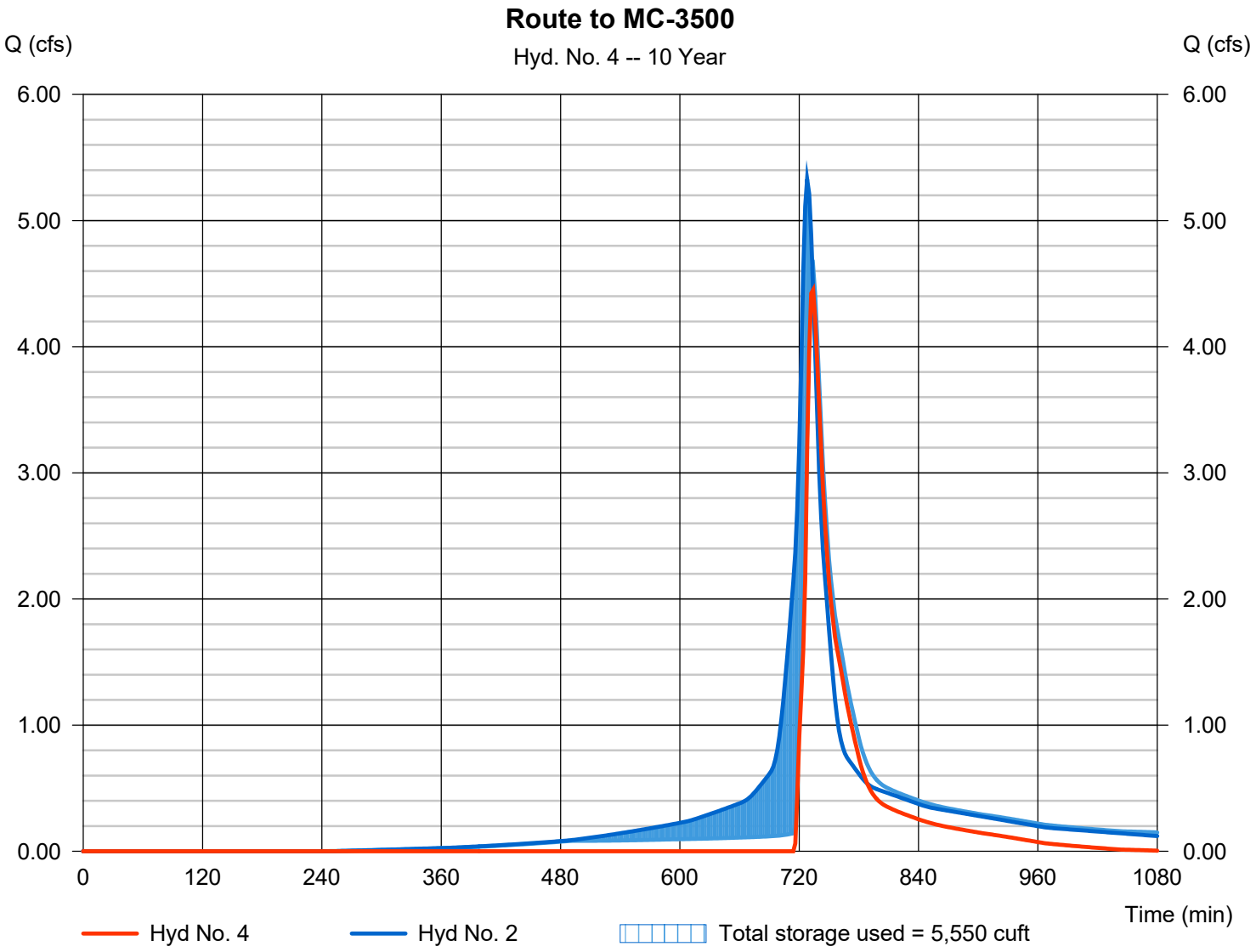
Hydrograph Report

Hyd. No. 4

Route to MC-3500

Hydrograph type	=	Reservoir	Peak discharge	=	4.449 cfs
Storm frequency	=	10 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	10,652 cuft
Inflow hyd. No.	=	2 - WS#2A	Max. Elevation	=	281.03 ft
Reservoir name	=	MC-3500 Chambers	Max. Storage	=	5,550 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

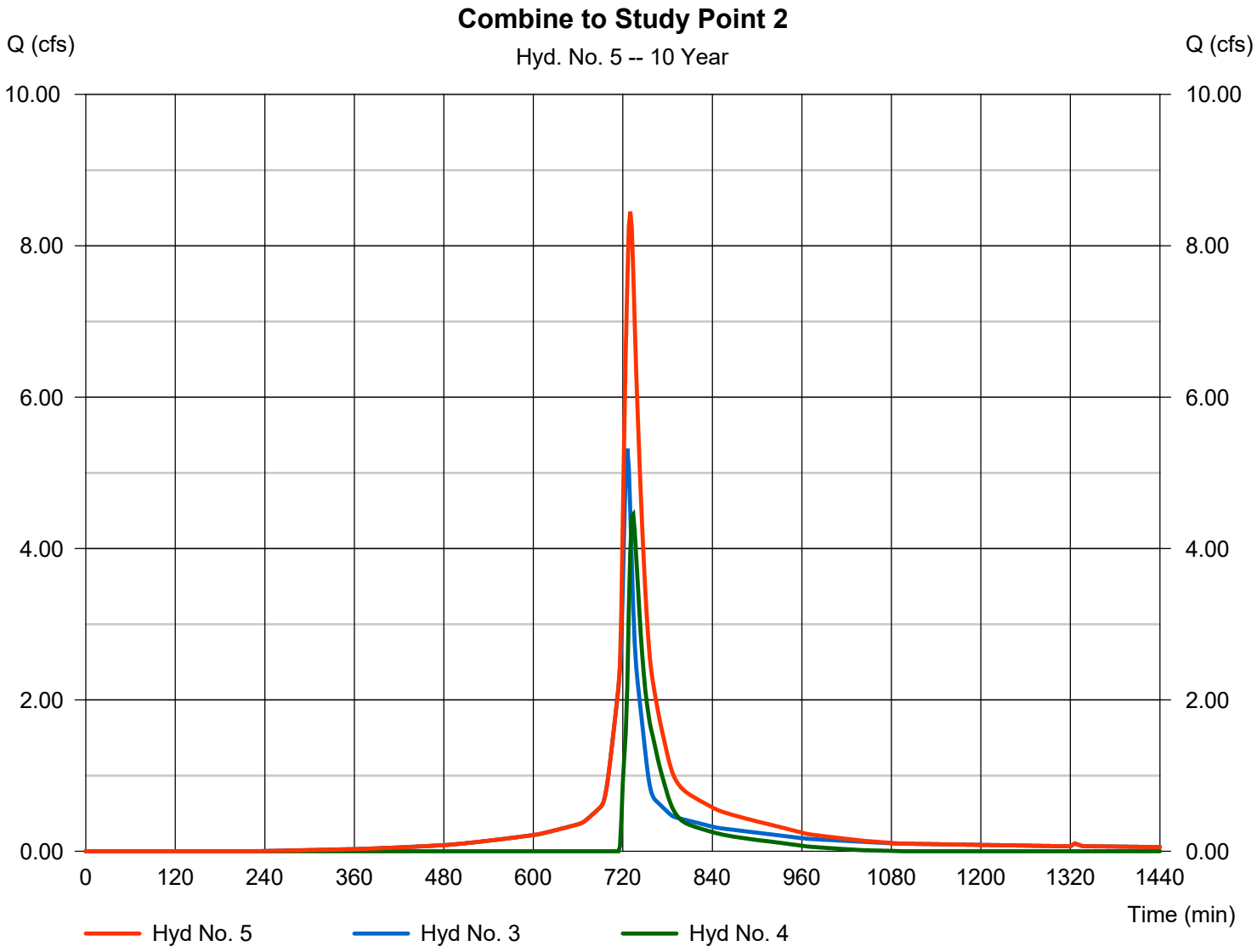


Hydrograph Report

Hyd. No. 5

Combine to Study Point 2

Hydrograph type	=	Combine	Peak discharge	=	8.454 cfs
Storm frequency	=	10 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	29,670 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	1.240 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.288	2	724	7,827	------	------	------	WS#1
2	SCS Runoff	9.737	2	728	39,959	------	------	------	WS#2A
3	SCS Runoff	9.617	2	726	35,618	------	------	------	WS#2B
4	Reservoir	9.202	2	730	27,118	2	281.99	6,225	Route to MC-3500
5	Combine	17.98	2	728	62,736	3, 4	------	------	Combine to Study Point 2

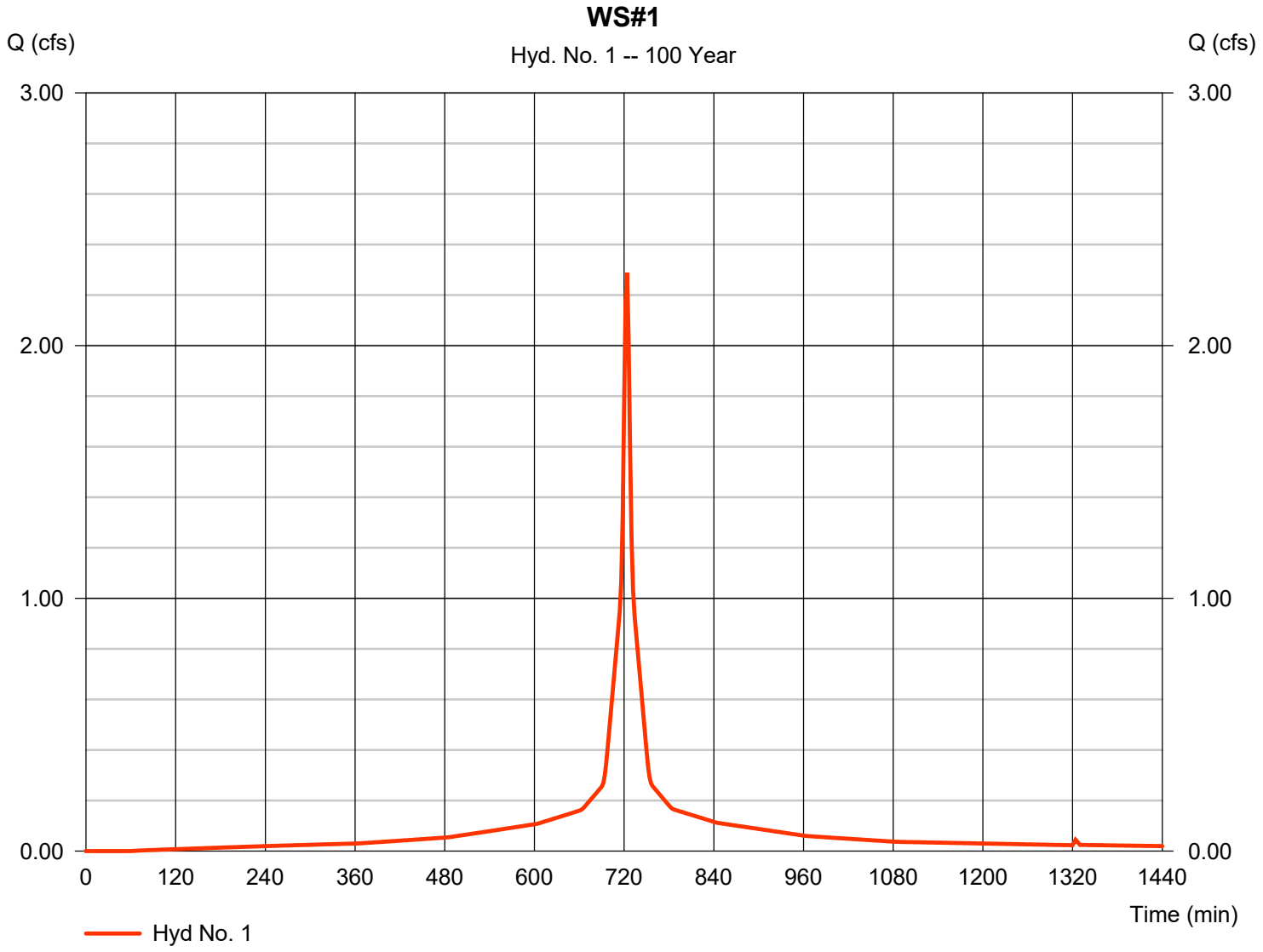
Hydrograph Report

Hyd. No. 1

WS#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.288 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	7,827 cuft
Drainage area	=	0.270 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.030 x 80) + (0.240 x 98)] / 0.270



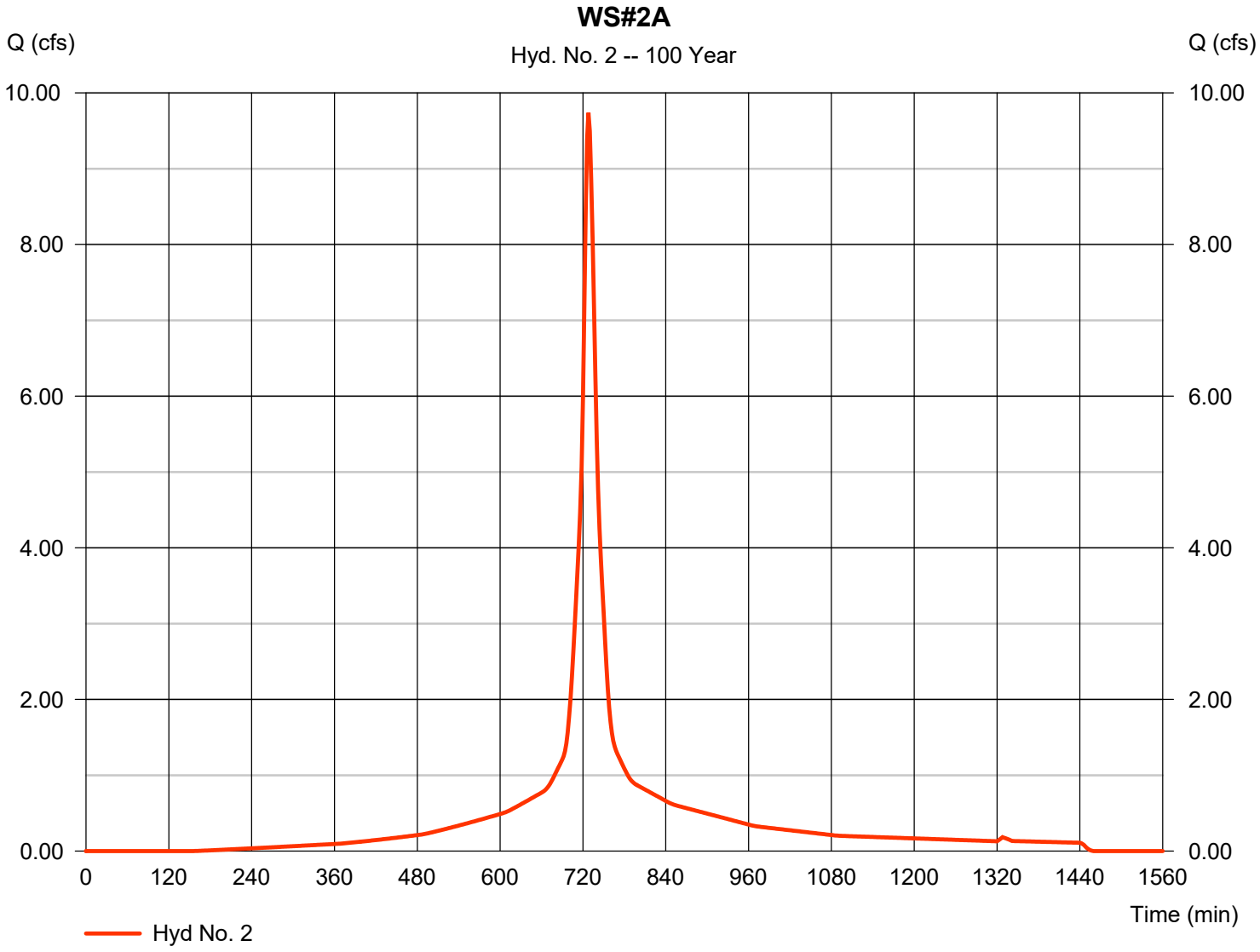
Hydrograph Report

Hyd. No. 2

WS#2A

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.737 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	39,959 cuft
Drainage area	=	1.370 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	13.00 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.450 x 74) + (0.920 x 98)] / 1.370



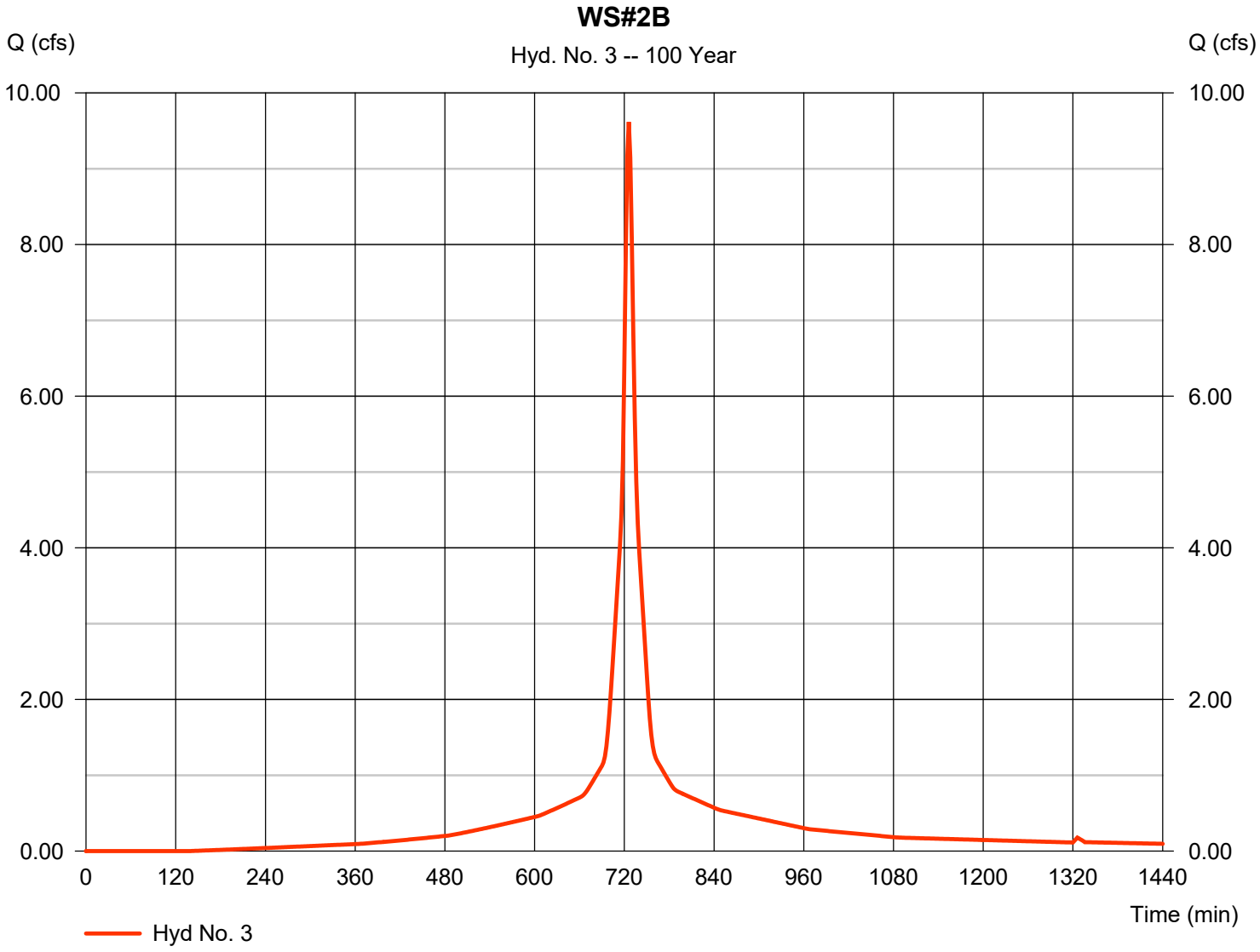
Hydrograph Report

Hyd. No. 3

WS#2B

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.617 cfs
Storm frequency	=	100 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	35,618 cuft
Drainage area	=	1.240 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.70 min
Total precip.	=	9.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.350 x 74) + (0.890 x 98)] / 1.240



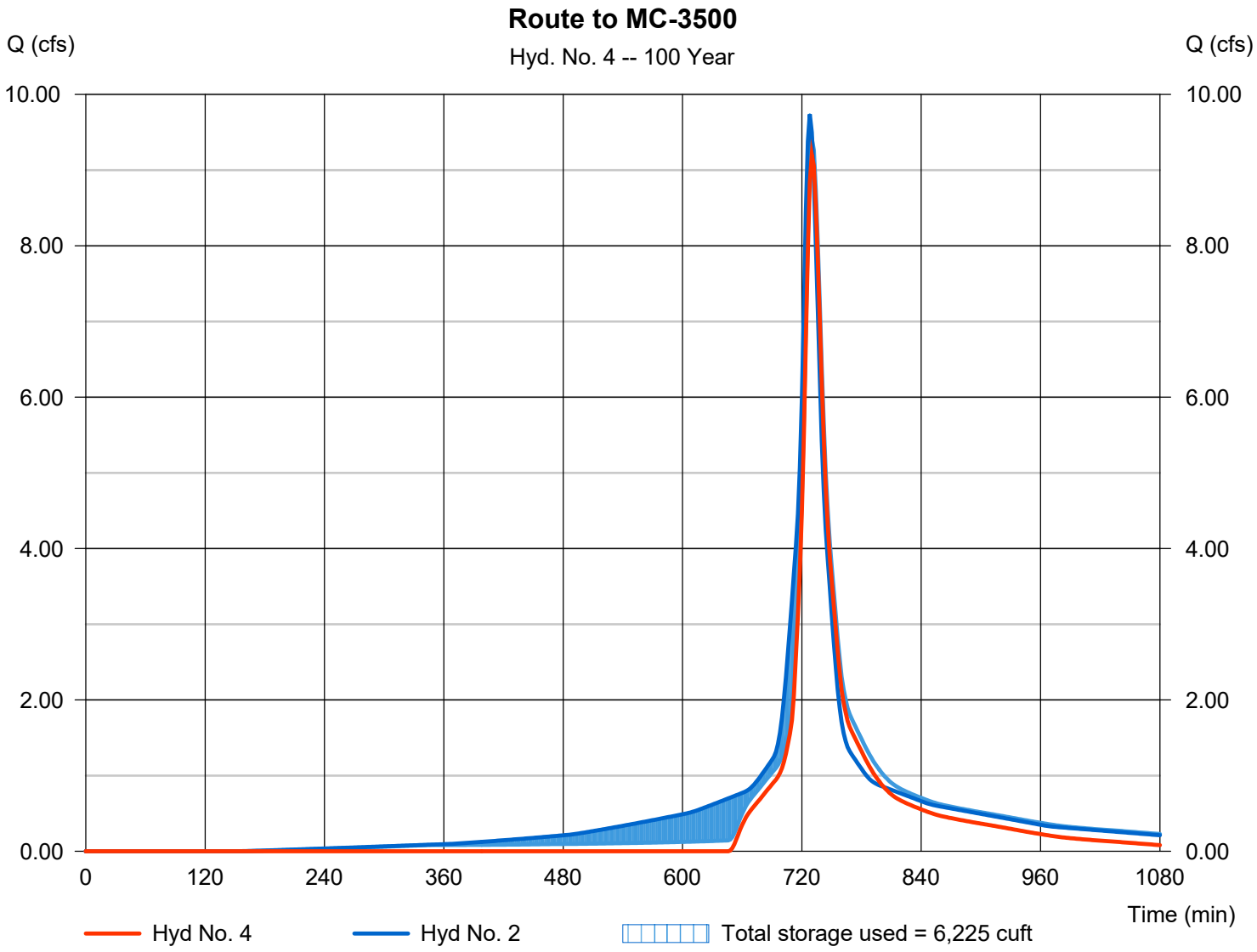
Hydrograph Report

Hyd. No. 4

Route to MC-3500

Hydrograph type	=	Reservoir	Peak discharge	=	9.202 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	27,118 cuft
Inflow hyd. No.	=	2 - WS#2A	Max. Elevation	=	281.99 ft
Reservoir name	=	MC-3500 Chambers	Max. Storage	=	6,225 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

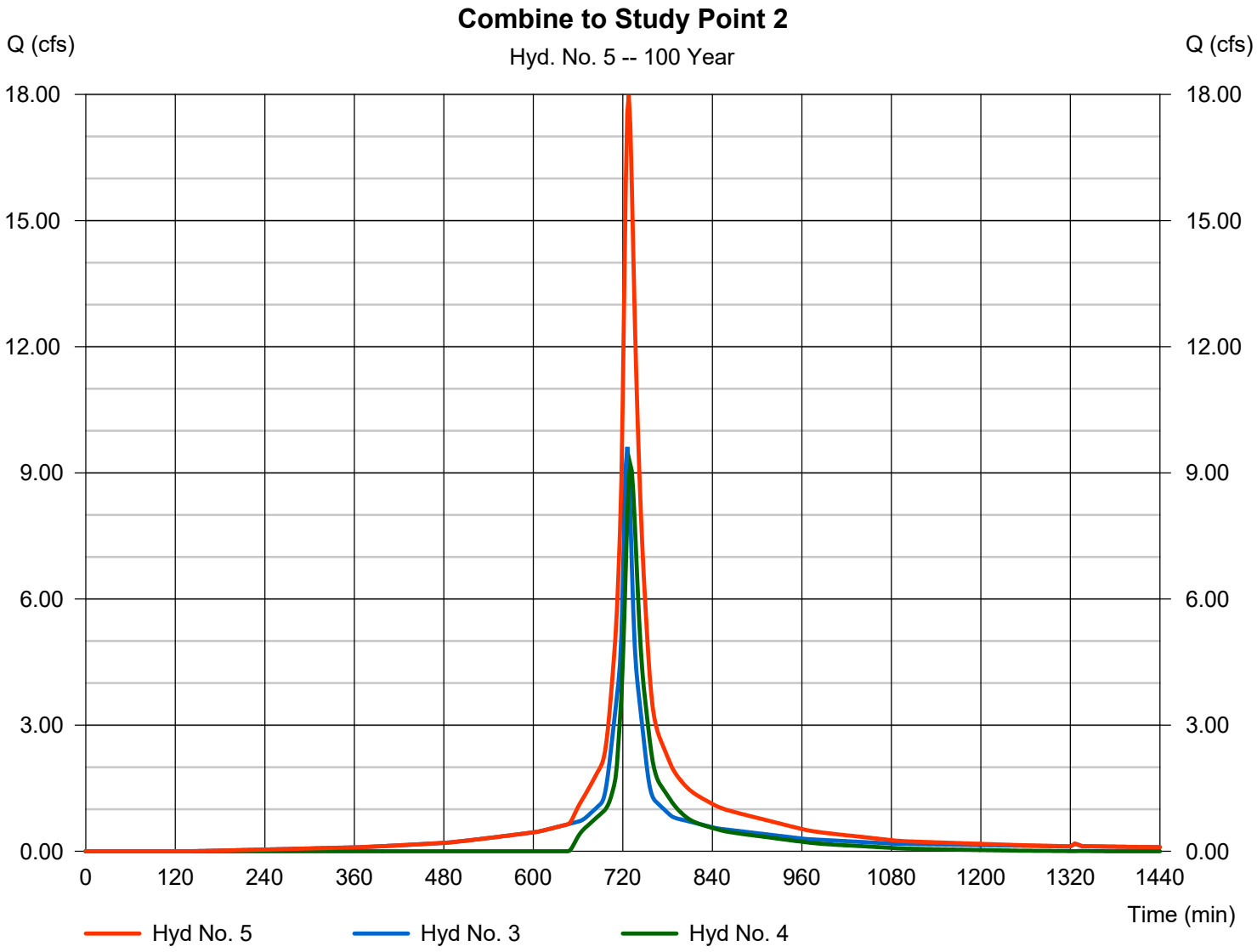


Hydrograph Report

Hyd. No. 5

Combine to Study Point 2

Hydrograph type	=	Combine	Peak discharge	=	17.98 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	62,736 cuft
Inflow hyds.	=	3, 4	Contrib. drain. area	=	1.240 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

White Plains Central School District) - 10991\WPSD 2203 - (HS Addition)\01-Reports\SWPPP\Design Calcs\precip.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.85	3.50	0.00	0.00	5.25	0.00	0.00	9.00
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix G

Pre- & Post-Development Drainage Area Map Engineering Plans

H 2 M architects + engineers

2 Executive Blvd., Suite 401
Suffern, NY 10901
845.357.7238 - www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
SFP	KMG		

PROJECT No.:	DATE:	SCALE:
WPSD2203	OCTOBER 2024	AS SHOWN

CLIENT

White Plains City School District

WHITE PLAINS HIGH SCHOOL ADDITION

**550 North Street
White Plains, NY 10605**

**SED Number:
66-22-00-01-0-016-030**

CONTRACT

**CONTRACT G
GENERAL CONSTRUCTION**

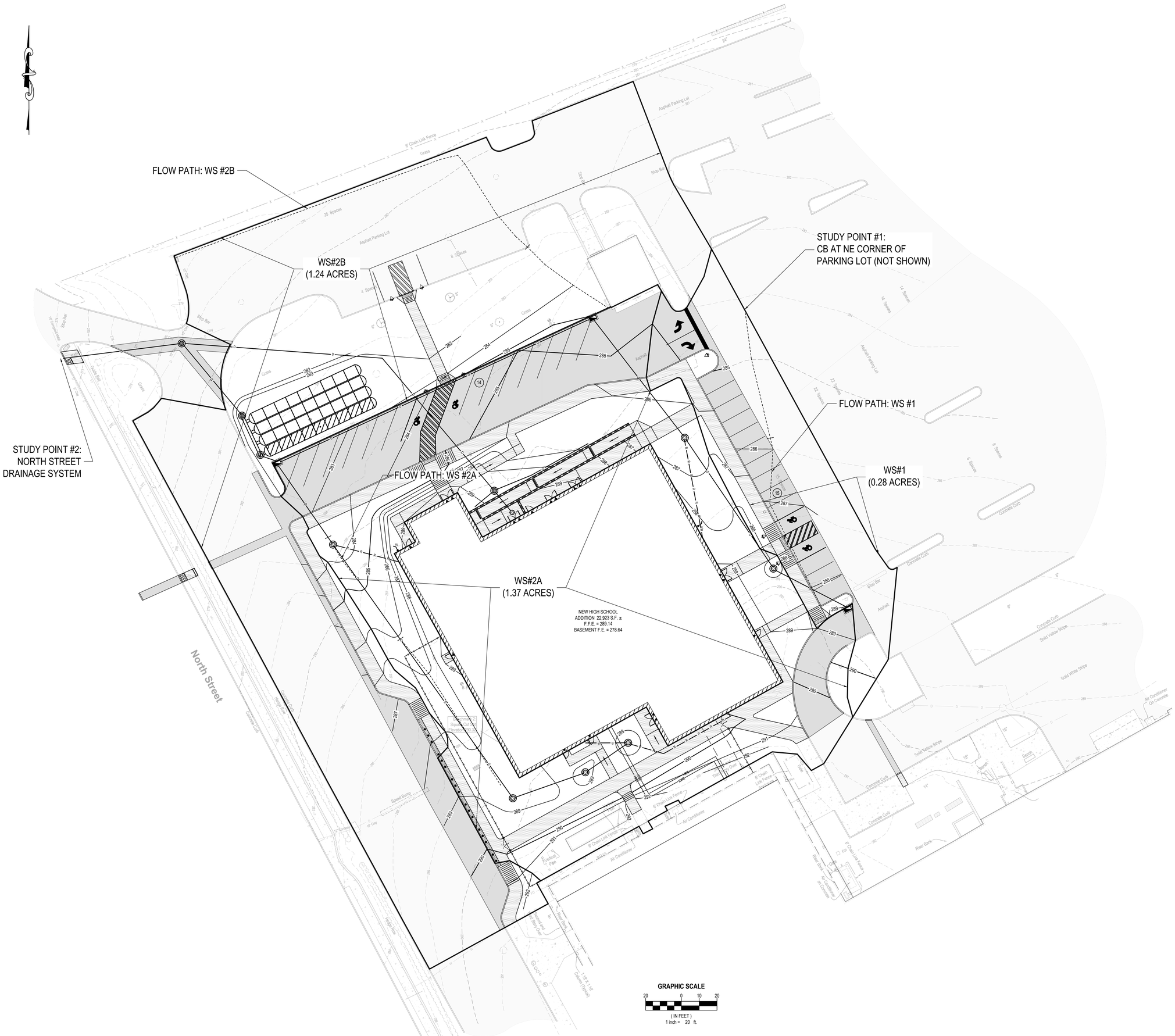
STATUS

SHEET TITLE

PRE-DEVELOPMENT DRAINAGE MAP

DRAWING No.

STM 100.00



H 2 M architects + engineers

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Suffern, NY 10901
845.357.7238 - www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

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DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
SFP	KMG		

PROJECT NO:	DATE:	SCALE:
WPSD2203	OCTOBER 2024	AS SHOWN

CLIENT

White Plains City School District

WHITE PLAINS HIGH SCHOOL ADDITION

**550 North Street
White Plains, NY 10605**

**SED Number:
66-22-00-01-0-016-030**

CONTRACT

**CONTRACT G
GENERAL CONSTRUCTION**

STATUS

SHEET TITLE

POST-DEVELOPMENT DRAINAGE MAP

DRAWING No.

STM 101.00