

**THE SCHOOL DISTRICT OF PHILADLPHIA
Board of Education
Office of Capital Programs
440 North Broad Street, 3rd Floor – Suite 371
Philadelphia, PA 19130**

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ADDENDUM No. 1

**Subject: Joseph W. Catharine Elementary School
2022 Classroom Modernization
SDP Contracts No. 2022-008-GC, 2022-008-E, 2022-008-P**

**Location: Joseph W. Catharine Elementary School
6600 Chester Avenue
Philadelphia, PA 19142**

This Addendum No. 1 dated FEBRUARY 3, 2022, shall modify and become part of the proposed Contract Documents of the work of this project. Any items not mentioned herein, or affected by, shall be performed strictly in accordance with the original Contract Documents, unless modified by prior addenda.

- 1. NOTICE: BID OPENING POSTPONED TO THURSDAY, FEBRUARY 24, 2022**
- 2. INSERT THE FOLLOWING DOCUMENTS INTO SECTION 01 1135-ASBESTOS ABATEMENT AND LEAD BASED PAINT STABILIZATION**
 - A. WORK PLAN FOR ABATEMENT OF ASBESTOS CONTAINING MATERIALS,
Prepared by PENNONI ASSOCIATES, INC.; 123 pages, 2/1/22**
 - B. ASBESTOS AND LEAD BASED PAINT INSPECTION REPORT-CATHARINE SCHOOL,
Prepared by PENNONI ASSOCIATES, INC; 29 pages, 2/2/22**
 - C. ASBESTOS AND LEAD BASED PAINT INSPECTION REPORT-CATHARINE ANNEX,
Prepared by PENNONI ASSOCIATES, INC.; 27 pages; 2/2/22**
 - D. DELETE references to CRITERION LABS, INC.**

-END OF ADDENDUM NO. 1-



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WORK PLAN

for

ABATEMENT OF ASBESTOS-CONTAINING MATERIALS

**ULCS# 1250 JOSEPH CATHARINE ELEMENTARY SCHOOL
CLASSROOM MODERNIZATIONS PROJECT
6600 CHESTER AVENUE
PHILADELPHIA, PENNSYLVANIA 19142**

Prepared For:

Mr. F. Gaeton Tavella
Office of Environmental Management
Philadelphia Public School District
Philadelphia, Pennsylvania

Prepared By:

Pennoni Associates, Inc.
515 Grove Street, Suite 1B
Haddon Heights, New Jersey 08035

A blue ink signature, appearing to read "ALLOYD", written over a horizontal line.

Alan Lloyd
Project Designer #032182

Project No. SDPLD21006
February 1, 2022

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END OF SECTION

PROJECT DIRECTORY

PROJECT NAME: Joseph Catharine Elementary Classroom Modernization
Asbestos Abatement

PROJECT LOCATION: 6600 Chester Avenue
Philadelphia, Pennsylvania 19142

CLIENT: Philadelphia Public School District
Office of Environmental Management
440 North Broad Street
Philadelphia, PA

Contact: Mr. F. Gaeton Tavella
215-400-5148

ASBESTOS PROJECT INSPECTOR
MONITORING: Pennoni Associates, Inc.
515 Grove Street, Suite 1B
Haddon Heights, New Jersey 08035

Contact: Jeremy Humble
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DATE OF WORKPLAN
DOCUMENTS: February 1, 2022

SECTION 01013

SUMMARY OF WORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions, and other Division-1 specification sections, apply to work of this section.

1.2 PROJECT/WORK IDENTIFICATION

- A. The project name is Joseph Catharine Elementary Classroom Modernization Project – Asbestos Abatement. The facility is located at 6600 Chester Avenue, Philadelphia, Pennsylvania. The contract documents have been prepared by the Owner's Environmental Consultant, Pennoni Associates Inc. and are dated February 1, 2022.
- B. The scope of the asbestos abatement project includes the proper removal and off-site disposal of asbestos-containing materials identified in this work plan. All work shall be conducted in accordance with the City of Philadelphia Asbestos Control Regulation Chapter 6-600 and all applicable Federal, State and Local Regulations. If required, the contractor shall submit an Alternative Method Request to treat each work area as a Minor Project for clearance purposes as well as an Alternative Method Request to utilize a remote 3 stage decontamination chamber.
- C. Tables 1A below lists the approximate quantities and locations of the identified asbestos-containing materials that are to be removed as part of this scope of work. The table is provided to supply Contractors with information to aid in the bidding process. The table shall in no way limit the scope of work. The Contractor shall be responsible to fully investigate the scope of work, verify all quantities and provide a proposal based on all existing conditions.

Table 1A – Identified and Presumed Asbestos-Containing Materials For Abatement Joseph Catharine Elementary – 6600 Chester Avenue Philadelphia, Pennsylvania 19142		
HID and Material	Location	Approx. Quantity
Pipe Fitting Insulation	Room 104	8 LF
Pipe Insulation 2-6"	Room 104	32 LF
Blackboard/Tackboard Glue Dots	Room 104	100 SF (material)
Floor Tile VAT 12"x12" Brown and Mastic	Room 104	30 SF
Sink Undercoat Mastic	Room 104	6 SF

Table 1A – Identified and Presumed Asbestos-Containing Materials For Abatement Joseph Catharine Elementary – 6600 Chester Avenue Philadelphia, Pennsylvania 19142		
HID and Material	Location	Approx. Quantity
Pipe Fitting Insulation	Room 106	16 LF
Pipe Insulation 2-6"	Room 106	50 LF
Blackboard/Tackboard Glue Dots	Room 106	100 SF (material)
Pipe Fitting Insulation	Room 107	10 LF
Pipe Insulation 2-6"	Room 107	48 LF
Blackboard/Tackboard Glue Dots	Room 107	30 SF (material)
Pipe Fitting Insulation	Room 108	8 LF
Pipe Insulation 2-6"	Room 108	32 LF
Blackboard/Tackboard Glue Dots	Room 108	100 SF (material)
Sink Undercoat Mastic	Room 108	8 SF
Fitting Insulation	Room 201	4 LF
Pipe Insulation 2-6"	Room 201	16 LF
Blackboard/Tackboard Glue Dots	Room 201	30 SF (material)
Fitting Insulation	Room 202	8 LF
Pipe Insulation 2-6"	Room 202	32 LF
Blackboard/Tackboard Glue Dots	Room 202	30 SF (material)
Fitting Insulation	Room 203	8 LF
Pipe Insulation 2-6"	Room 203	32 LF
Blackboard/Tackboard Glue Dots	Room 203	60 SF (material)
Fitting Insulation	Room 204	8 LF
Pipe Insulation 2-6"	Room 204	32 LF
Blackboard/Tackboard Glue Dots	Room 204	60 SF (material)
Fitting Insulation	Room 205	4 LF
Pipe Insulation 2-6"	Room 205	16 LF
Blackboard/Tackboard Glue Dots	Room 205	60 SF (material)
Fitting Insulation	Room 206	8 LF
Pipe Insulation 2-6"	Room 206	32 LF
Blackboard/Tackboard Glue Dots	Room 206	30 SF (material)
Fitting Insulation	Room 209	8 LF
Pipe Insulation 2-6"	Room 209	32 LF
Blackboard/Tackboard Glue Dots	Room 209	60 SF (material)
Fitting Insulation	Room 210	8 LF
Pipe Insulation 2-6"	Room 210	32 LF
Blackboard/Tackboard Glue Dots	Room 210	60 SF (material)
Fitting Insulation	Room 211	8 LF
Pipe Insulation 2-6"	Room 211	36 LF
Blackboard/Tackboard Glue Dots	Room 211	60 SF (material)

SF – Square Feet; LF – Linear Feet; EA – Each; CF – Cubic Feet

Totals –

1. Fitting Insulation – 106 LF

2. Pipe Insulation 2-6" – 418 LF
 3. Blackboard/Tackboard Glue Dots – 780 SF
 4. Sink Undercoat Mastic – 14 SF
 5. Floor Tile VAT 12"x12" Brown and Mastic – 30 SF
- D. Contractor shall submit to the Environmental Consultant a written request for pre-commencement, pre-encapsulation, and final inspections for each work area.
- E. Contract documents indicate the work of the contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the contract documents include, but are not necessarily limited to the following:
1. Applicable codes and regulations (including fire codes)
 2. Notices and permits
 3. Existing site conditions and restrictions on use of the site
 4. Work performed prior to work under this contract
 5. Work to be performed concurrently by separate contractors
 6. Work to be performed subsequent to work under this contract
 7. Alternates
 8. Allowances
9. Summary by References: Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, addenda and modifications to the contract documents issued subsequent to the initial printing of this project manual and including but not necessarily limited to printed material referenced by any of these. Work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.
10. General and administrative requirements are set forth in the following specification sections:
1. 01013 Summary of work
 2. 01043 Project Coordination
 3. 01091 Definitions And Standards
 4. 01301 Submittals
11. Removal work requirements are set forth in the following specification sections, listed here according to the sequence of the work:
1. 01092 Codes, Regulations, and Standards - Sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the Owner and

- which either must be applied for and received, or which must be given to governmental agencies before start of work.
2. 01503 Temporary Facilities - Sets forth the support facilities needed such as electrical and plumbing connections for the decontamination units.
 3. 01526 Temporary Enclosures and Work Area Preparation - Details the requirements for the sheet plastic barriers that isolate the work area from the balance of the building.
 4. 01410 Air Monitoring - Describes air monitoring by Asbestos Project Inspector (API) so that the building beyond the work area will remain uncontaminated. OSHA compliance air monitoring to determine required respiratory protection is the responsibility of the Contractor.
 5. 01563 Decontamination Units - Explains the setup and operation of the personnel and waste decontamination units.
 6. 01513 Temporary Pressure Differential and Air Filtration System - Sets forth the procedures to set up the negative air machines and ventilation of the work area.
 7. 01560 Worker Protection - Sets forth the procedures and equipment for adequate worker protection.
 8. 01562 Respiratory Protection - Sets forth the procedures and equipment required for adequate protection against inhalation of airborne asbestos fibers.
12. Asbestos Removal Work Procedures are described in the following specification sections:
1. 02081 Removal of Asbestos-Containing Material
 2. 02084 Disposal of Asbestos-Containing Waste
13. Decontamination of the work area after completion of abatement work is described in the following sections:
1. 01711 Project Decontamination - Describes the sequence of cleaning and decontamination procedures to be followed during removal of the sheet plastic barriers isolating a work area.
 2. 01714 Work Area Clearance - Describes the analytical methods used to determine if the work area has been successfully cleaned of contamination.
 3. 01701 Project Closeout - Details the closeout procedures to end the project once asbestos removal work is complete including final paperwork requirements.

1.3 INSPECTION

- A. Prior to commencement of work, inspect areas in which work will be performed. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions as necessary to document conditions. Submit to Environmental Consultant prior to starting work.

1.4 POTENTIAL HAZARDS

- A. The disturbance or dislocation of asbestos-containing materials may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workmen and building occupants. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the identified potential hazards and of proper work procedures which must be followed.
- B. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified asbestos-containing materials, take appropriate continuous measures as necessary to protect these persons from the potential hazard of exposure. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local city agencies.
- C. **Lead-based paint** is located on components in the work area including walls, ceilings, and door frames. When these materials are impacted, they should be handled following all federal, state, and local regulations.

1.5 STOP WORK

- A. If the Owner or Environmental Consultant presents a written stop work order immediately and automatically stop all work. Do not recommence work until authorized in writing by the Owner or Environmental Consultant.

1.6 ASBESTOS-CONTAINING MATERIALS

- A. The following asbestos-containing materials are known or presumed to be present at the worksite in the renovation areas. If any other materials are found, which are suspected of containing asbestos, notify the Environmental Consultant immediately both verbally and in writing. Do not proceed with additional work without written approval.
 - 1. Floor Tile VAT 12"x12" Brown and Mastic
 - 2. Pipe Fitting Insulation
 - 3. Pipe Insulation, 2-6"
 - 4. Blackboard/Tackboard Glue Dots
 - 5. Floor Tile VAT 9"x9" Brown

6. Sink Undercoat Mastic White

1.7 QUALITY ASSURANCE

- A. The Asbestos Abatement Contractor shall use adequate numbers of skilled workmen who are thoroughly trained and experienced in asbestos abatement and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this Section. The Asbestos Abatement Contractor must possess a valid Contractor certification as issued by the Commonwealth of Pennsylvania, Department of Labor and Industry and the City of Philadelphia Department of Public Health. All workers must possess a currently valid worker accreditation from the Commonwealth of Pennsylvania, Department of Labor and Industry and produce such accreditation upon request. The Contractor must also have onsite at least one individual with a currently valid supervisor's accreditation as issued by the Commonwealth of Pennsylvania, Department of Labor and Industry.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 ASBESTOS CONTRACTOR USE OF PREMISES

- A. Use of the Site: Confine operations at the site to the areas permitted under the contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.
1. Keep existing entrances and adjacent parking areas serving the premises clear. Do not use these areas for parking or storage of materials. Parking and storage is available immediately adjacent to the building only.
 2. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials/equipment and location of storage trailers to the areas indicated. If additional storage is necessary the Contractor must obtain and pay for such storage off site.
 3. Lock automotive type vehicles, such as passenger cars and trucks and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with motor running or ignition key in place or accessible to unauthorized persons.
- B. Contractor's Use of the Existing Buildings: Maintain existing building in a safe and weather tight condition.
1. Smoking or open fires will not be permitted within the building enclosure.
 2. Keep means of egress clear of rubbish, construction materials and asbestos

waste.

3. The Contractor shall be responsible for supplying, cleaning and maintaining adequate toilet facilities.
4. The Contractor shall be responsible for supplying an appropriate office trailer(s), exterior to the building, with adequate heat and/or air conditioning as needed.

3.2 BUILDING OCCUPANCY

- A. All required access into portions of the building or utility service interruption that could affect the building must be carefully coordinated with the Owners' Environmental Consultant and the Owner.
- B. Floors must remain un-occupied during containment bag removal of asbestos-containing fitting insulation and pipe insulation.

3.3 SUMMARY OF WORK - ASBESTOS ABATEMENT

- A. The scope of the Asbestos Abatement Project includes the complete removal and off-site disposal of asbestos-containing materials indicated within this specification, Asbestos Inventory Report (AIR Form), Contract and described herein. **All materials removed as part of the scope of work shall be replaced with acceptable materials of the same kind.** The Contractor shall be responsible to fully investigate the scope of work and provide a proposal based on all existing conditions. Change orders for new materials not identified in this specification may be considered, but not for variances in quantities of known materials throughout the buildings. The contractor shall submit their bid based on existing conditions and observations made during the bid walkthrough.
- B. All asbestos abatement shall be performed in strict accordance with the City of Philadelphia Asbestos Control Regulation Chapter 6-600 and all applicable Federal, State and Local Regulations.
- C. All identified asbestos-containing materials shall be removed and properly disposed of as asbestos-containing waste off-site prior to building renovation.
- D. The Contractor shall complete all abatement work, meet clearance criteria and breakdown containment in accordance with the sequence of work indicated below.
- E. The Contractor shall:
 1. Make all required notifications, obtain all permits and pay all fees associated with the work.
 2. Coordinate all work with the Owners' Environmental Consultant and the

Asbestos Project Inspector.

3. Isolate each work area and install temporary enclosures in accordance with Section 01526 and as necessary to perform abatement procedures. The Contractor shall maintain a minimum of critical barriers and air pressure differential in all Work Areas.
4. Install temporary facilities in accordance with Section 01503. The Asbestos Contractor shall make interconnection to existing electrical panels utilizing a Pennsylvania licensed electrician. The Asbestos Contractor shall make interconnection with site hydrants if needed utilizing back-flow preventers as necessary to provide adequate water for all abatement activities. Permitting and authorization for use shall be the responsibility of the asbestos contractor.
5. Install the decontamination facilities in accordance with Section 01563 where necessary to perform abatement procedures.
6. Remove all asbestos-containing material in accordance with Section 02081.
7. Dumpsters, vehicles, and all other equipment that will be required to perform the asbestos removal work shall be off-loaded, and stored onsite. Asbestos dumpsters shall be clearly marked. Asbestos dumpsters shall be watertight, completely enclosed and kept locked when left unattended.
8. Clean and decontaminate each work area in accordance with Section 01711.
9. After meeting air clearance criteria in accordance with Section 01714, and after receiving approval by the Environmental Consultant, breakdown and remove temporary enclosure systems and decontamination facilities.
10. Replace all removed materials with acceptable materials of the same kind. Replaced materials shall include, but not be limited to: joints associated with fiberglass pipe insulation, end cap mastic, tank insulation, and floor tiles.
11. Submit all required documentation required to close out the project in accordance with Sections 01301 and 01701.

END OF SECTION

SECTION 01043

PROJECT COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions, and other Division-1 specification sections, apply to work of this section.

1.2 SUMMARY

- A. This section specifies administrative and supervisory requirements necessary for project coordination including, but not necessarily limited to:
 - 1. Notifications
 - 2. Permits and Fees
 - 3. Administrative and supervisory personnel
 - 4. Pre-Construction meeting
 - 5. Progress Meetings
 - 6. Documentation required at the work site
 - 7. Coordination of Subcontractors and other trades
 - 8. Requirements for the Contractor's Construction Schedule are included in Section "Submittals"

1.3 NOTIFICATIONS:

- A. The Contractor shall make all required notifications associated with this contract to include, but not be limited to those listed in Section 01092 - Codes, Regulations and Standards.

1.4 PERMITS AND FEES:

- A. The Contractor shall obtain and pay for all required permits, and pay all fees associated with this contract to include, but not limited to those listed in Section 01092 - Codes, Regulations and Standards.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

- A. General Superintendent: Provide a General Superintendent who is experienced in the administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Competent Person as required by OSHA in 29 C.F.R. 1926 for the Contractor and is the Contractor's Representative responsible for

compliance with all applicable Federal, State, and Local Regulations, and this specification. This person shall have completed a course at an E.P.A. Training Center or an equivalent certified course in asbestos abatement procedures and have had a minimum of three (3) years of on-the-job training and meet any additional requirements set forth in 29 C.F.R. 1926 for a Competent Person and this specification. The responsibilities of the General Superintendent shall include but not be limited to the following:

1. When an event of unusual and significant nature occurs at the site (e.g. failure of negative pressure system, rupture of temporary enclosures), prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise the Owner's Agent/Fee Developer in advance at the earliest possible date. The General Superintendent shall submit these special reports directly to the Building Owner within one (1) day of occurrence. A copy shall be submitted to the Owners' Environmental Consultant and others affected by the occurrence.
- B. Project Supervisor: Provide a full-time Project Supervisor who is certified and fully knowledgeable in the use of equipment and situations unique to that work site. A separate individual shall be required to fulfill this function for each work area and shift. This individual shall have a valid supervisor certification issued by the Commonwealth of Pennsylvania, Department of Labor and Industry. The responsibilities of the Project Supervisor shall include but not be limited to the following:
1. Ensure that the workers are wearing all proper personal protective equipment as outlined in Sections 01560 & 01562 of this specification and are properly trained in their use.
 2. Keep all necessary log records as specified in this specification and ensure that they are recorded in accordance with this specification and Federal, State, and Local regulations.
 3. Prepare and submit reports of significant accidents occurring at the site and anywhere else where work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.
 4. Survey the work areas at a minimum of twice per work shift (e.g. once every four hours) to ensure that the workers protective equipment is not ripped or torn, that respiratory protection is worn at all times; that air filtration devices are operating at peak efficiency, and that all individuals are following the procedures outlined in this specification.

5. Ensure that sufficient personal protective equipment is stored on-site.
6. Ensure that precautions have been taken to prevent heat stress and other emergencies from occurring (e.g. selecting light-weight protective clothing, reducing the work rate, and providing adequate fluid breaks).

1.6 EMERGENCY PLAN

- A. The Contractor shall develop and submit to the Owner, a contingency plan for emergencies, in case of fire, explosion, accidents, power failure, air filtration system failure, supplied air system failure, heat/cold related problems, and any other problem which may require modification or bypassing of decontamination. The plan shall include procedures for repair and clean up following temporary breach of containment barriers.
- B. Emergency procedures shall be in written form and prominently posted in the clean change area and equipment room of the worker decontamination area and inside the work area itself. Everyone, prior to entering the work area, must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.
- C. Employees shall be trained in evacuation procedures in the event of workplace emergencies.
 1. For non-life-threatening, situations employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the workplace to obtain proper medical treatment.
 2. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him/her from the workplace and secure proper medical treatment.
- D. Telephone numbers and locations of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone.

1.7 PRE-CONSTRUCTION MEETING

- A. The Contractor shall attend pre-construction meeting(s) scheduled by the Owners' Environmental Consultant. These meetings shall be attended by the Owner and/or the Owners' Environmental Consultant. At this meeting, the Contractor shall present in detail the following:
 1. A detailed plan for preparation of each work area
 2. Description of protective clothing and approved respirators to be used

3. Delineation of responsibility of work site isolation
 4. Explanation of the decontamination sequence
 5. Description of all removal methods to be used
 6. Explanation of the handling of asbestos-contaminated waste
 7. Proof of workers' medical exams substantiated by reports signed by the physician
 8. Description of the final clean-up procedures to be used
 9. Proposed waste disposal site and proof of transporter registration. If a change in either of these items occurs during the course of the project, the Contractor shall revise Federal, State, and Local notifications and notify the building Owner's Agent/Fee Developer and Owners' Environmental Consultant
 10. A sample of the waiver form to be used for all authorized visitors to the site
 11. Explanation of air filtration systems to be used for personnel protection, building protection, and environmental protection
 12. List of equipment on hand or to be obtained, and the operation of each to include impact on the personnel, building environment, and work environment
 13. Plan of action in the event of an emergency
 14. A detailed Work Schedule with start and completion dates for all phases of asbestos abatement to include, but not be limited to, Worksite Preparation, Pre-inspection, Removal, Clean-up, Pre-encapsulation Inspection, Encapsulation, Final Clean, Clean-up Inspection, Disposal, Final Inspection, Post-testing, Analysis and Post Inspection
- B. The Contractor (or independent air monitoring laboratory employed on his behalf) shall present in detail how compliance with OSHA monitoring requirements shall be fulfilled.
- C. Asbestos work shall not proceed until the Owner, the Environmental Consultant, and the Contractor agree on the details listed in this article.

1.8 PROGRESS MEETINGS

- A. The Contractor shall attend all pre-scheduled Progress Meetings. These shall be scheduled by the Owners' Construction Manager. This meeting shall also be attended by the OSHA Air Monitoring Firm. This meeting shall serve to update all items discussed in the Pre-Construction Meeting.

1.9 DOCUMENTATION REQUIRED AT WORK SITE

- A. The Contractor shall display copies of required letters of Notification and Permits.
- B. Additional documentation required to be available at the job site shall include:
 - 1. List of emergency telephone numbers to include:
 - a. The Monitoring Firm employed by the Building Owner
 - b. EPA
 - c. OSHA
 - d. Fire Department
 - e. Police Department
 - f. Local Hospital
 - g. Emergency Squad
 - h. Contractor
 - i. Contractor's Project Supervisor and General Superintendent
 - 2. Written work area emergency procedures
 - 3. List of personnel including all new employees
 - 4. A Daily Log of all persons entering the work area including all visitors. The Log shall include the full name and certification number of all employees, and the time when they enter and exit the work site. Non-employees of the Asbestos Contractor shall be required to sign an acceptable waiver form. The waiver form shall be approved by the Environmental Consultant.
 - 5. The Daily Log shall include a record of start and stop times, any work area problems encountered, any corrective action, and estimated amount of asbestos waste generated.
 - 6. The Contractor shall be responsible for obtaining a copy of the daily monitoring logs from their air testing firms and maintaining this with the Daily Log at the job site.
- C. Work schedules and updated progress charts depicting all phases of work and completion deadlines
- D. Copy of Waste Hauler's Certificate and copy of all landfill receipts.

1.10 COORDINATION OF SUBCONTRACTORS AND OTHER TRADES:

- A. The Contractor shall work in complete cooperation and coordination with any Subcontractors or any other trades that may be involved in other work within or related to the facility.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01091

DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents. Certain terms used in Contract Documents are defined in this article.
- B. General Requirements: The provisions or requirements of Division-1 sections apply to the entire work of the Contract and, where so indicated, to other elements which are included in the project.

1.3 GENERAL DEFINITIONS

- A. Definitions contained in this Article are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.
 - 1. Approved: The term “approved”, where used in conjunction with the Owner’s action on the Contractor's submittals, applications, and requests, is limited to the responsibilities and duties of the Architect stated in General and Supplementary Conditions. Such approval shall not release the Contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.
 - 2. Building Owner: The person in whom legal title to the premises is vested unless the premises are held in land trust, in which instance the Building Owner means the person in whom beneficial title is vested.
 - 3. Construction Manager: The Construction Manager is the firm employed by the Owner.
 - 4. Contractor: A self-employed person, company, unincorporated association, firm, partnership, or corporation and any owner or operator thereof, which engages in an asbestos project or employs persons engaged in an asbestos project.
 - 5. Directed: Terms such as “directed”, “requested”, “authorized”, “selected”, “approved”, “required”, and “permitted” mean “directed by the Owner”, “requested by the “Owner”, and similar phrases. However, no implied

meaning shall be interpreted to extend the Owner's responsibility into the Contractor's area of construction supervision.

6. Engineer: The term "Engineer" is used to refer to the Environmental Consultant for the purposes of this project.
7. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations".
8. General Superintendent: This is the Contractor's Representative at the work site. This person will be the Competent Person required by OSHA in 29 CFR 1926.
9. Indicated: This term refers to Paragraphs or Schedules in the Specifications, and similar requirements in Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used, it is to help locate the reference. No limitation on location is intended, except as specifically noted.
10. Install: The term "install" is used to describe operations at the project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations".
11. Project Site: The term indicates the space available to the Contractor for performance of the work, either exclusively or in conjunction with others performing other construction as part of the project
12. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use".
13. Regulation: The term "Regulations" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.
14. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the project site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

1.4 DEFINITIONS RELATIVE TO ASBESTOS ABATEMENT

A. Definitions

1. Abatement: Any and all procedures physically taken to control fiber release from asbestos-containing materials. This includes removal, encapsulation, enclosure and repair.
2. Abatement Activities: All activities from the initiation of work area preparation through the successful clearance air monitoring and work area breakdown performed at the conclusion of an asbestos project.
3. Accredited or Accreditation (when referring to a person or laboratory): A person or laboratory accredited in accordance with section 206 of Title II of the Toxic Substances Control Act (TSCA).
4. Aerosol: A system consisting of particles, solid or liquid, suspended in air.
5. Aggressive Sampling: A method of sampling in which the individual collecting the air sample creates or simulates activity by the use of mechanical equipment during the sampling period to stir up settled dust and simulate activity in that area of the building.
6. Airlock: A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways separated by a distance of at least 4 feet such that one passes through one doorway not the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
7. Air Cell: Insulation normally used on pipes and duct work that is comprised of corrugated cardboard which is frequently comprised of asbestos combined with cellulose or refractory binders.
8. Air Monitoring: The process of sampling and measuring the fiber content of a known volume of air in a known period of time.
9. Air Sampling: The process of measuring the fiber content of a known volume of air collected during a known period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA which are utilized for lower detectability and specific fiber identification.
10. Ambient Air Monitoring: Measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the worksite.

11. Amended Water: Water to which a surfactant has been added to decrease the surface tension to 35 or less dynes.
12. ANSI: American National Standards Institute.
13. Approved Safety and Health Program: A program providing training in the handling and use of asbestos-containing material, and safety and health risks inherent in such handling and use, together with methods for minimizing the exposure of workers and the public to asbestos fibers, and instruction in all applicable federal, state and local laws and regulations pertaining to asbestos-related work.
14. Area Air Sampling: Any form of air sampling or monitoring where the sampling device is placed at some stationary location.
15. Asbestos: The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite - grunerite, anthophyllite, and actinolite - tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.
16. Asbestos-Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.
17. Asbestos-Containing Building Material (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.
18. Asbestos-Containing Waste Material: Any material which is, or is suspected of being, or any material contaminated with, an asbestos-containing material which is to be removed from a work area for disposal.
19. Asbestos-Contaminated Objects: Any objects that have been contaminated by asbestos or asbestos-containing material.
20. Asbestos Contractor: Any person who contracts to perform an asbestos project.
21. Asbestos Debris: Pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.
22. Asbestos Inspection Report: A report on the condition of a building or structure in relation to the presence and condition of asbestos therein.
23. Asbestos Project: Any activity involving the removal, enclosure, or encapsulation of asbestos materials or any renovation, repair or demolition which disturbs asbestos materials.

24. Asbestos Project Inspector: An individual who is responsible for the enforcement of all applicable regulations and the project specifications for the Building Owner.
25. Asbestos Removal Plan: A plan which will be undertaken so as to prevent asbestos from becoming airborne in the course of the alteration, renovation, modification or demolition of any building or structure.
26. Asbestos Supervisor: An accredited EPA AHERA and PA DOL licensed Supervisor who supervises the workers during an asbestos project and ensures that proper asbestos abatement procedures as well as individual safety procedures are being adhered to. This individual shall have completed approved training courses and be fully certified.
27. Authorized Visitor: The Owner, testing lab personnel, the Project Environmental Consultant, emergency personnel or a representative of any federal, state and local regulatory or other agency having authority over the project.
28. Asbestos Worker: An individual who disturbs, removes, encapsulates, repairs, or encloses friable asbestos material. This individual shall have completed an approved training course and be fully certified.
29. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.
30. Baseline Monitoring: A measurement or determination of airborne asbestos fiber concentrations inside the work area and outside the building prior to starting the abatement activities.
31. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.
32. Building: Any public or private commercial, industrial, or institutional structure or any residential structure which contains four (4) or more dwelling units.
33. Building Occupants: Employees, tenants, or other persons who live, work or utilize the services offered in a building.
34. Building Owner: The owner of a building or his/her authorized representative.
35. Calibration: The determination within specific limits of the true value of the scale reading or indication of an instrument.
36. Category I Non-friable Asbestos-containing Material: Asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized

- Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
37. Category II Non-friable Asbestos-containing Material: Any material, excluding Category I non-friable asbestos-containing material, containing more than 1 percent asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
 38. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.
 39. Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.
 40. Certified Safety Professional (C.S.P.): An individual having a bachelor's degree from an accredited college or university and a minimum of four years' experience as a safety professional and who has successfully completed both levels of the examination administered by the Board of Certified Safety Professionals and who is currently certified.
 41. CFR: Code of Federal Regulations.
 42. Class I Asbestos Work: Means activities involving the removal of TSI and surfacing ACM and PACM.
 43. Class II Asbestos Work: Means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal and asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
 44. Class III Asbestos Work: Means repair and maintenance operations, where asbestos-containing material, including thermal system insulation and surfacing material, is unlikely to be disturbed.
 45. Class IV Asbestos Work: Means maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.
 46. Clean Room: An uncontaminated area or room which is part of the worker decontamination enclosure system with provisions for storage of workers' street clothes and protective equipment.
 47. Clearance Air Monitoring: The employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers, and shall be performed as the final abatement activity.

48. Competent Person: Means in addition to the definition in 29 CFR 1926.32 [f], one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure and who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 [f]: in addition for Class I and Class II work one who is specially trained in a training-course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for Project Designer or Supervisor, or its equivalent and, for Class II and Class IV work, one who is trained in an Operations and Maintenance (O&M) Course developed by the EPA [40 CFR 763.92 {a} {2}].
49. Containment: An area which has been sealed with polyethylene sheeting to prevent contamination of asbestos to the outside environment.
50. Controlled Area: An area which can be separated off from occupied areas of the building for the purpose of controlling fiber release to the occupied areas of the building. This area is controlled so as to limit access and to ensure that, when accessed, all appropriate health and safety protocols are utilized.
51. Critical Barrier: Two (2) layers of plastic sheeting applied to openings occurring in a wall, the underside of ceiling construction, electrical outlets, non-removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, diffusers, floor drains, etc., that prevent the distribution of asbestos fibers to the surrounding area.
52. Curtained Doorway: A device which consists of at least three overlapping sheets of plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached at the bottom to ensure that the sheets hang straight and maintain a seal over the doorway when not in use.
53. Decontamination Enclosure System: A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers, materials, waste containers, and equipment.
54. Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.
55. Disposal Bag: A properly labeled 6-mil thick leak-tight plastic bags used for transporting asbestos waste from the work area to the disposal site. Each bag is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

AND
ASBESTOS, NA 2212, RQ
AND
CLASS 9 LABEL

In addition to the above labeling, all disposal containers will also be labeled with the owner's name and the location where the waste was generated.

- 56. Disturb: Any action taken which may alter, change, or stir, including but not limited to the removal, encapsulation, enclosure or repair of asbestos-containing material.
- 57. Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.
- 58. Bridging encapsulant: An encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.
- 59. Penetrating encapsulant: An encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
- 60. Removal encapsulant: A penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather than for in situ encapsulation.
- 61. Encapsulation: The spraying or coating of exposed asbestos materials with a sealant to prevent the release of asbestos fibers.
- 62. Enclosure: The construction of an air-tight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.
- 63. EPA: United States Environmental Protection Agency.
- 64. Equipment Decontamination Enclosure System: That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.
- 65. Equipment Room: A contaminated area or room which is part of the worker decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.

- 66. Fiber: An acicular single crystal or a similarly elongated polycrystalline aggregate which displays some resemblance to organic fibers by having such properties as flexibility, high aspect ratio, silky luster, axial lineation, and others, and which has attained its shape primarily through growth rather than cleavage.
- 67. Fiber Count: Average number of fibers in a cubic centimeter of air (f/cc).
- 68. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.
- 69. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
- 70. Friable Asbestos Material: Material that contains more than 1.0% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry or by the proposed abatement activity.
- 71. Glove bag: A sack (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.
- 72. Glove bag Technique: A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glove bag technique must be highly trained, experienced and skilled in this method.
- 73. HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.
- 74. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.
- 75. High Volume Sampling Pump: An instrument used to draw ambient air over a filter at a flow rate between ten (10) and thirty (30) liters per minute. The high-volume sampling pumps are generally utilized for background or baseline samples, environmental samples, decontamination unit samples, and post-abatement samples.
- 76. Holding Area: A small chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.

- 77. HVAC: Heating, ventilation, and air conditioning.
- 78. Incidental Exposure: Occupational exposure to asbestos fibers caused to oneself by disturbing ACM during the performance of one's job, except during the performance of an asbestos project or minor project.
- 79. Industrial Hygiene: That science and art devoted to the recognition, evaluation and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well-being, or significant discomfort and inefficiency among workers or among the citizens of the community.
- 80. Industrial Hygienist: An individual having a college or university degree or degrees in Engineering, Chemistry, Physics, or Medicine or related Biological Sciences who, by virtue of special studies and training must have been sufficient in all of the above cognate sciences to provide the following abilities:
 - a. To recognize the environmental factors and to understand their effect on people and their well-being.
 - b. To evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair people's health and well-being.
 - c. To prescribe methods to eliminate, control or reduce such stresses when necessary to alleviate their effects.
- 81. Isolation Barrier: The construction of partitions, the placement of solid materials, and the plasticizing of apertures to seal off the work place from surrounding areas to contain asbestos fibers in the work area.
- 82. Log: An official record of all activities that occurred during the project and it shall identify the Building Owner, Agent, Contractor, and Workers, and other pertinent information (e.g., equipment malfunctions, contamination beyond the work area, etc.).
- 83. Low Volume Sampling Pump: An instrument used to collect air samples at rates ranging from one (1) to three (3) liters per minute. The low volume sampling pump, also known as the personal sampling pump, is essentially utilized for personal samples and work area samples.
- 84. Negative Pressure Equipment: A portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and inside of the work area.
- 85. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere, and negative during inhalation in relation to the air pressure of the outside atmosphere.

- 86. NESHAP: National Emission Standards for Hazardous Air Pollutants as prescribed in 40 CFR Part 61.
- 87. NIOSH: National Institute for Occupational Safety and Health.
- 88. Occupied Area: An area of the worksite where abatement is not taking place and where personnel or occupants normally function, or where workers are not required to use personal protective equipment.
- 89. OSHA: United States Occupational Safety and Health Administration.
- 90. Outside Air: The air outside the work place.
- 91. PCM: Phase contrast microscopy.
- 92. Permissible Exposure Limit: The permitted exposure to a particular concentration of a substance as specified by OSHA. The current permissible exposure limit for asbestos is 0.1 f/cc for an eight-hour (8) time-weighted average.
- 93. Personal Air Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.
- 94. Personal Protective Equipment (PPE): Appropriate protective clothing, gloves, eye protection, footwear, head gear and approved respiratory protection.
- 95. Plasticize: To cover walls and floors with plastic sheeting as herein specified or by using approved spray plastics.
- 96. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
- 97. Qualitative Fit Test: The individual test subject's responding (either voluntarily or involuntarily) to a chemical challenge outside the respirator face piece. Three of the most popular methods include: irritant smoke test, odorous vapor test and taste test.
- 98. Quantitative Fit Test: Exposing the respirator wearer to a test atmosphere containing an easily detectable nontoxic aerosol, vapor or gas as the test agent. Instrumentation, which samples the test atmosphere and the air inside the face piece of the respirator, is used to measure quantitatively the leakage into the respirator. There are a number of test atmospheres, test agents, and exercises to perform during the tests.
- 99. Regulated Asbestos-Containing Material (RACM): (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has

a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

100. Removal: The stripping of any asbestos-containing materials from surfaces or components of a facility or taking out structural components in accordance with 40 CFR 61 Subparts A and M.
101. Removal Encapsulant: A penetrating encapsulant specifically designed for removal of asbestos-containing materials rather than for in situ encapsulation.
102. Renovation: Altering in any way one or more facility components. Operations in which load supporting structural members are wrecked or taken out are excluded.
103. Replacement Material: Any material used to replace ACM that contains less than .01% asbestos.
104. Repair: Returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.
105. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.
106. Shift: A worker's, or simultaneous group of worker's, complete daily term of work.
107. Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.
108. Staging Area: The work area near the waste decontamination chamber where containerized asbestos waste has been placed prior to removal from work area.
109. Strip: To remove friable asbestos materials from any part of the facility.
110. Structural Member: Any load-supporting member of a facility, such as beams and load-supporting walls, or any non-load-supporting member, such as ceiling and non-load-supporting walls.
111. Surface Barriers: The plasticizing of walls, floors, and fixed objects within the work area to prevent contamination from subsequent work.
112. Surfacing Material: Material in a building that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

- 113. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- 114. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.
- 115. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
- 116. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.
- 117. Wet Methods: The use of amended water or removal encapsulant to minimize the generation of fibers during ACM disturbance.
- 118. Work Area: The area where asbestos-related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.
- 119. Worker Decontamination Enclosure System: A system designed for the controlled ingress and egress of workers, authorized visitors, and other individuals between the work area and the non-work area consisting of a clean room, a shower room, and an equipment room and maintained separately by the use of airlocks.

1.5 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. This Article is provided to help the user of these Specifications understand the format, language, implied requirements, and similar conventions. None of the explanations shall be interpreted to modify the substance of Contract requirements.
- B. Specification Format: These Specifications are organized into Divisions, Sections or Trade Headings based on the Construction Specifications Institute's 16-Division format and the MASTERFORMAT numbering system. This organization conforms generally to recognized construction industry practice.
- C. Specification Content: This Specification has been produced employing conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately

interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the full context of the Contract Documents so indicates.

2. Imperative language is used generally in the Specifications. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.
- D. Assignment of Specialists: The Specification requires that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and the assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
1. This requirement should not be interpreted to conflict with enforcement of building codes or regulations governing the work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
- E. Trades: Use of titles such as “carpentry” is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter”. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

1.6 INDUSTRY STANDARDS:

- A. Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the project site for reference.
1. Referenced industry standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.
 2. Unreferenced industry standards are not directly applicable to the work, except as a general requirement of whether the work complies with recognized construction industry standards.
- B. Publication Dates: Where compliance with an industry standard is required,

comply with standard in effect as of date of Contract Documents.

- C. Updated Standards: At the request of the Owner's Agent/ Fee Developer, Contractor or authority having jurisdiction, submit a Change Order proposal where applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected. The Owner's Agent/ Fee Developer will decide whether to issue a Change Order to proceed with the updated standard.
- D. Conflicting Requirements: Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Owner's Agent/ Fee Developer for a decision before proceeding.
- E. Minimum Quantities or Quality Levels: In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Owner's Agent/ Fee Developer for decision before proceeding.
- F. Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to that entities' construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.
 - 2. Although copies of standards needed for enforcement of requirements may be part of required submittals, the Owner's Agent/ Fee Developer reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.
- G. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of Contract Documents:
 - 1. ACGIH - American Conference of Governmental Industrial Hygienists,

- 6500 Glenway Avenue, Building D-5, Cincinnati, Ohio 45211
2. AIHA - American Industrial Hygiene Association, 2700 Prosperity Ave., Suite 250, Fairfax, VA 22031
 3. CFR - Code of Federal Regulations Available from Government Printing Office, Washington, DC 20402 (usually first published in Federal Register)
 4. CGA - Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202, 703/979-0900
 5. CS - Commercial Standard of NBS (U.S. Dept. of Commerce), Government Printing Office, Washington, DC 20402, 202/377-2000
 6. DOL&I(PA) - State of Pennsylvania Department of Labor and Industry Asbestos Occupations Accreditation and Certification, P.O. Box 3465, Harrisburg, PA 17105-3465
 7. DOT - Department of Transportation, 400 Seventh St. SW, Washington, DC 20590, 202/426-4000
 8. EPA - Environmental Protection Agency, 401 M St. SW, Washington, DC 20460, 202/382-3949
 9. FS - Federal Specification (General Services Admin.) Regional GSA Office or GSA Specifications Unit (WFSIS), 7th and D Streets SW, Washington, DC 20406, 202/472-2205 or 2140.
 10. GA - Gypsum Association, 1603 Orrington Ave. Evanston; IL 60201, 312/491-1744.
 11. GSA - General Services Administration, F St. and 18th St. NW, Washington, DC 20405, 202/655-4000.
 12. IEEE - Institute of Electrical and Electronic Engineers, 345 E. 47th Street New York, NY 10017, 212/705-7900.
 13. MIL - Military Standardization Documents (U.S. Dept. of Defense) Naval Publications and Forms Center, 5801 Tabor Ave., Philadelphia, PA 19120.
 14. MSHA - Mine Safety and Health Administration, Approval and Certification Center, P.O. Box 251, Route 1, Triadelphia, WV 26059.
 15. NBS - National Bureau of Standards (U.S. Dept. of Commerce) Gaithersburg, MD 20234, 301/921-1000.
 16. NEC - National Electrical Code (by NFPA).
 17. NESHAP - National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).
 18. NIOSH - National Institute for Occupational Safety and Health, 4676 Columbia Parkway, Cincinnati, OH 45226.
 19. NFPA - National Fire Protection Association, Batterymarch Park, Quincy, MA 02269 617/770-3000.

20. NIST - National Institute of Standards & Technology, Gaithersburg, MD 20834, 301/921-1000
21. NRCA - National Roofing Contractors Association, 6250 River Road Rosemont, IL 60018, 312/318-6722.
22. NVLAP - National Voluntary Laboratory Accreditation Program, Gaithersburg, MD 20834, 301/921-1000
23. OSHA - Occupational Safety & Health Administration (U.S.D.O.L.), Government Printing Office Washington, DC 20402, 202/783-3238.
24. PS - Product Standard of NBS (U.S. Dept. of Commerce), Government Printing Office Washington, DC 20402, 202/783-3238.
25. RFCI - Resilient Floor Coverings Institute, 966 Hungerford Drive, Suite 12-B Rockville, MD 20805, 301/340-8580.
26. UL - Underwriters Laboratories, 333 Pfingsten Rd. Northbrook, IL 60062, 312/272-8800.

H. Trade Union Jurisdictions: The Contractor shall maintain, and require subcontractors to maintain complete current information on jurisdictional matters, regulations and pending actions, as applicable to construction activities. The Contract Documents have not been organized or subdivided to imply any trade union or jurisdictional agreements.

1. Discuss new developments at project meetings at the earliest feasible dates. Record relevant information and actions agreed upon.
2. Assign and subcontract construction activities, and employ tradesmen and laborers in a manner that will not unduly risk jurisdictional disputes that could result in conflicts, delays, claims and losses.

1.8 SUBMITTALS:

A. Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01092

CODES, REGULATIONS, AND STANDARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY:

- A. This section sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of work.
 - 1. Requirements include adherence to all work practices and procedures set forth in applicable codes, regulations and standards and this specification.
 - 2. Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

1.3 CODES AND REGULATIONS:

- A. General Applicability of Codes and Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.
- B. Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.
- C. Federal Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
- D. OSHA: U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:

1. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 58 of the Code of Federal Regulations
 2. Respiratory Protection Title 29, Part 1910, Section 134 of the Code of Federal Regulations
 3. Construction Industry Title 29, Part 1926, of the Code of Federal Regulations
 4. Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 2 of the Code of Federal Regulations
 5. Hazard Communication Title 29, Part 1910, Section 1200 of the Code of Federal Regulations
 6. Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the Code of Federal Regulations
- E. DOT: U. S. Department of Transportation, including but not limited to:
1. Hazardous Substances Title 29, Part 171 and 172 of the Code of Federal Regulations
- F. EPA: U. S. Environmental Protection Agency (EPA), including but not limited to:
1. Asbestos Abatement Projects; Worker Protection Rule Title 40 Part 763, Sub-part G of the Code of Federal Regulations
 2. Asbestos Hazard Emergency Response Act (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Sub-part E of the Code of Federal Regulations
 3. Training Requirements of (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Sub-part E, Appendix C of the Code of Federal Regulations.
 4. National Emission Standards for Hazardous Air Pollutants (NESHAP) National Emission Standard for Asbestos Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the Code of Federal Regulations
- G. State Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
1. Air Pollution Control Act, Chapter 124.
 2. Bureau of Solid Waste Management Major Asbestos Standards.
 3. Commonwealth of Pennsylvania Department of Labor and Industry Asbestos Occupations Accreditation and Certification Act, Act 194-1990
- H. Local Requirements:
1. City of Philadelphia, Department of Public Health, Board of Health, Asbestos Control Regulation adopted pursuant to Title 6, Health Code, of the Phila. Code, specifically Chapter 6-600, Asbestos Projects; effective May 22, 1989, Amended March 4, 1993.

1.4 STANDARDS:

- A. General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.
- B. Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all standards pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable standard on the part of himself, his employees, or his subcontractors.
- C. Standards: which apply to asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
 - 1. American National Standards Institute (ANSI) 1430 Broadway New York, New York 10018 (212)354-3300E
 - a. Fundamentals Governing the Design and Operation of Local Exhaust Systems Publication Z9.2-79
 - b. Practices for Respiratory Protection Publication Z88.2-80
 - 2. American Society for Testing and Materials (ASTM) 100 Bar Harbor Drive, Conshohocken, PA 19428 (610)832-9585
 - a. Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 849-82

1.5 EPA GUIDANCE DOCUMENTS: discuss asbestos abatement work or hauling and disposal of asbestos waste materials listed below for the Contractor's information only. These documents do not describe the work and are not a part of the work of this contract. EPA maintains an information number (800) 334-8571, publications can be ordered from (800) 424-9065 (554-1404 in Washington, DC):

- A. Asbestos-Containing Materials in School Buildings - A Guidance Document. Part 1 & 2. (Orange Books) EPA C00090 (out of print)
- B. Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA 560/5-85-024
- C. Friable Asbestos-Containing Materials in Schools: Identification and Notification Rule (40 CFR Part 763)
- D. Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA 560/5-84-005
- E. Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA

560/5-84-006

- F. Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA 560/5-85-018
- G. Asbestos Waste Management Guidance. EPA 530-SW-85-007
- H. Asbestos Fact Book. EPA Office of Public Affairs. Asbestos in Buildings. Simplified Sampling Scheme for Friable Surfacing Materials
- I. Commercial Laboratories with Polarized Light Microscopy Capabilities for bulk asbestos identification
- J. A Guide to Respiratory Protection for the Asbestos Abatement Industry. EPA-560-OPTS-86-001

1.6 NOTICES:

A. U.S. ENVIRONMENTAL PROTECTION AGENCY

1. Send Written Notification as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAP Contact at least 10 days prior to beginning any work on asbestos-containing materials. Send notification to the following address:
2. USEPA REGION 3: Asbestos NESHAP Contact, Air & Waste Management Division, 841 Chestnut Street, Philadelphia, PA 19107, (215) 597-6552. Notification: Include the following information in the notification sent to the NESHAP contact:
 - a. Name and address of owner or operator.
 - b. Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.
 - c. Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components. For facilities in which the amount of friable asbestos materials is less than 260 linear feet on pipes and less than 160 square feet on other facility components, explain techniques of estimation.
 - d. Location of the facility being demolished or renovated.
 - e. Scheduled starting and completion dates of demolition or renovation.
 - f. Nature of planned demolition or renovation and method(s) to be used.
 - g. Procedures to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61 Subpart M).
 - h. Name and location of the waste disposal site where the friable asbestos waste material will be deposited.
 - i. For facilities being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and

in danger of imminent collapse, the name, title, and authority of the State or local governmental representative who has ordered the demolition.

B. STATE AND LOCAL AGENCIES:

1. Send written notification as required by state and local regulations prior to beginning any work on asbestos-containing materials.

1.7 PERMITS:

- A. The Contractor shall obtain all required Permits, and pay all Fees associated with his contract.
- B. All asbestos containing waste is to be transported by an entity maintaining a current "Industrial waste hauler permit" specifically for asbestos-containing materials, as required for transporting of waste asbestos-containing materials to a disposal site.

1.8 LICENSES:

- A. Licenses: Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

1.9 POSTING AND FILING OF REGULATIONS:

- A. Posting and Filing of Regulations: Post all notices required by applicable federal, state and local regulations. Maintain two (2) copies of applicable federal, state and local regulation and standard. Maintain one copy of each at job site. Keep on file in Contractor's office one copy of each.

1.10 SUBMITTALS:

- A. Before Start of Work: Submit the following to the Owner's Representative for review. No work shall begin until these submittals are returned with Owner's Representative's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.
- B. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:
 1. State and Local Regulations: Submit copies of codes and regulations applicable to the work.
 2. Notices: Submit notices required by federal, state and local regulations together with

proof of timely transmittal to agency requiring the notice.

3. Permits: Submit copies of current valid permits required by state and local regulations.
4. Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 USE OF PREMISES:

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to adjacent property owners, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approval is granted by the School.
 - a. Schedule deliveries to minimize use of driveways and entrances.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 01301

SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for submittals required for performance of the work, including:
 - 1. Contractor's construction schedule
 - 2. Submittal schedule
 - 3. Daily construction reports
 - 4. Product Data
 - 5. Miscellaneous Submittals
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Permits/Notifications
 - 2. Applications for Payment
 - 3. Performance and Payment Bonds
 - 4. Insurance Certificates
 - 5. Emergency Plan
 - 6. Licenses/Certifications/Pennsylvania Act 34 Clearance
 - 7. List of Subcontractors

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Transmit each submittal to the Environmental Consultant sufficiently in advance of performance of related activities to avoid delay.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar Chart Schedule: Prepare a fully developed, horizontal bar chart type Contractor's construction schedule. Submit at pre-construction meeting.

1. Coordinate the contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
 2. Indicate completion and clearance of each work area in advance of the date established for substantial completion. Allow time for testing and other Owner's Representative's procedures necessary for certification of clearance and substantial completion.
- B. Phasing: Provide notations on the schedule to show how the sequence of the work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to substantial completion.
- C. Work Stages: Indicate important stages of construction for each major portion of the work, including testing and installation.
1. Mobilization
 2. Non-asbestos demolitions
 3. Preparation of the work area
 4. Asbestos removal
 5. Clearance testing
 6. Substantial completion
 7. Demobilization
- D. Area Separations: Provide a separate time bar to identify each work area or major construction area for each major portion of the work. Indicate where each element in an area must be sequenced or integrated with other activities.
- E. Distribution: Following response to the initial submittal, print and distribute copies to the Owner's Representative, Owner, Environmental Consultant, subcontractors, and other parties required to comply with scheduled dates.
- F. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 PRODUCT DATA

- A. Collect product data into a single submittal. Product data includes printed information such as manufacturer's installation instructions, catalog cuts, standard wiring diagrams and performance curves. Where product data must be specially prepared because standard printed data is not suitable for use, submit as "shop drawings".

- B. Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which is not required, mark copies to indicate the applicable information. Include the following information:
 - 1. Manufacturer's printed recommendations.
 - 2. Compliance with recognized trade association standards.
 - 3. Compliance with recognized testing agency standards.
 - 4. Application for testing agency labels and seals.
- C. Preliminary Submittal: Submit a preliminary single-copy of product data where selection of options is required.
- D. Submittals: Submit five (5) copies of each required submittal. The Owner's Representative will retain two (2), and will return the one marked with action taken and corrections or modifications required.

1.7 MISCELLANEOUS SUBMITTALS

- A. Safety Data Sheets: Process material safety data sheets as “product data”.
- B. Closeout Submittals: Refer to section "Project Closeout" and to individual sections of these specifications for specific submittal requirements of project closeout information.
- C. Field Records: Furnish a set of original documents as maintained on site.

1.8 OWNER'S REPRESENTATIVE'S ACTION

- A. Compliance with specified characteristics is the Contractor's responsibility.

PART 2 PRODUCTS (NOT APPLICABLE).

PART 3 EXECUTION (NOT APPLICABLE).

END OF SECTION

SECTION 01410

AIR MONITORING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to work of this section.
- B. Air Monitoring: Work area clearance is described in Section 01714 Work Area Clearance.

1.2 DESCRIPTION OF THE WORK

- A. Not in Contract Sum: This section describes work being performed by the Environmental Consultant. This work is not in the Contract Sum.
- B. This section describes air monitoring carried out by the Environmental Consultant to verify that the building beyond the work area and the outside environment remains uncontaminated. This section also sets forth airborne fiber levels both inside and outside the work area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.
- C. Air monitoring required by OSHA is work of the Contractor and is not covered in this Section. The Abatement Contractor is responsible for providing daily OSHA compliance monitoring as per 29 C.F.R. 1926.1101. OSHA monitoring shall be included in the Asbestos Contractor's Contract Sum.

1.3 AIR MONITORING

- A. Work Area Isolation: The purpose of the Environmental Consultant's air monitoring is to detect faults in the work area isolation such as:
 - 1. Contamination of the building outside of the work area with airborne asbestos fibers.
 - 2. Failure of filtration or rupture in the differential pressure system.
 - 3. Contamination of air outside the building envelope with airborne asbestos fibers.
- B. Should any of the above occur, immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Environmental Consultant.

1.4 WORK AREA AIRBORNE FIBER COUNT

- A. The Environmental Consultant will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

1.5 WORK AREA CLEARANCE

- A. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Environmental Consultant will sample and analyze air per Section 01714 Work Area Clearance.
- B. The Environmental Consultant will be conducting air monitoring throughout the course of the project.

1.6 STOP ACTION LEVELS

A. Inside Work Area:

1. Maintain an average airborne count in the work area of less than the Stop Action Level given below for the type of respiratory protection in use. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8-hour period exceeds the Stop Action Level, stop all work except corrective action, leave pressure differential and air circulation system in operation and notify the Environmental Consultant. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Environmental Consultant.

STOP ACTION LEVEL (f/cc)	IMMEDIATE STOP LEVEL (f/cc)	MINIMUM RESPIRATOR REQUIRED	PROTECTION FACTOR
0.5	1.0	PAPR	50

2. If airborne fiber counts exceed Immediate Stop Level given above for type of respiratory protection in use for any period of time cease all work except corrective action. Notify the Environmental Consultant. Do not recommence work until fiber counts fall below Stop Action Level given above for the type of respiratory protection in use. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by the Environmental Consultant.

B. Outside Work Area:

1. If any air sample taken outside of the Work Area exceeds the base line established below or is greater than 0.010 f/cc as determined by PCM analysis, whichever is greater, immediately and automatically stop all work except corrective action. The Environmental Consultant shall inspect and determine the source of the high reading and so notify the Contractor in writing.
2. If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:
 - a. Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, and floor).
 - b. Decontaminate the affected area in accordance with Section 01712 Cleaning & Decontamination Procedures.
 - c. Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01714 Work Area Clearance.
 - d. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.
 - e. If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a Shower Room and Changing Room as set forth in Section 01563 Decontamination Units at entry point to affected area.
 - f. After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 01714 Work Area Clearance.
3. If the high reading was the result of other causes initiate corrective action as determined by the Environmental Consultant.

- C. Effect on Contract Sum: Complete corrective work with no change in the Contract Sum if high airborne fiber counts were caused by Contractor's activities or negligence. The Contract Sum and schedule will be reviewed and may be adjusted for additional work caused by high airborne fiber counts beyond the Contractor's control.

1.7 ANALYTICAL METHODS

- A. The following methods will be used by the Environmental Consultant in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.
1. Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 methodology.
 2. Phase Contrast Microscopy (PCM) and Transmission Electron Microscopy (TEM) NIOSH Method 7402 clearance criteria shall be performed by EPA 40 CFR Part 763 Appendix A to Subpart E methodology and compared to the Philadelphia Asbestos Control Regulation Chapter 6-600.

1.8 SAMPLE VOLUMES

- A. General: The number and volume of air samples taken by the Environmental Consultant will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical method used.

1.9 SCHEDULE OF AIR SAMPLES

- A. Daily:
1. From start of work of Section 01526 Temporary Enclosures through the work of Section 01711 Project Decontamination, the Environmental Consultant may be taking the following samples on a daily basis:
 - a. Inside the Work Area: A minimum of one (1) sample shall be taken per work shift. A low volume sampler shall be employed, drawing a minimum sample volume of 180 liters.
 - b. Outside the Work Area, but inside the building: A minimum of two (2) samples shall be taken per work shift. A sampler shall be employed, drawing a sufficient sample volume to reach a detection limit of 0.010f/cc. The sampling device shall be placed in locations where potential contamination could occur (e.g. outside entrances and exits to the Work Area) and shall be moved periodically to assess the potential for contamination of adjacent areas at all critical points in the containment system. Special attention shall be given to locations where exhaust ducts from air filtration devices run through occupied areas of the building.
 - c. In the Clean Room of the Personnel/Waste Decontamination Unit: A minimum of one (1) sample shall be taken in the Decontamination Unit Clean Room per work shift. A high volume sampler shall be employed drawing a sufficient sample volume to reach a detection limit of 0.010f/cc. The sample(s) shall be taken at a time when

activity levels are expected to be at their peak (e.g. shift breaks).

- d. Downwind of Air Filtration Unit Exhaust: Where feasible due to on site conditions, one (1) sample shall be taken per work shift to evaluate potential fiber escape through the Air Filtration Device. A high volume sampler shall be employed drawing a sufficient sample volume to reach a detection limit of 0.010f/cc.
 - e. The Analytical Method for all daily environmental monitoring shall be Phase Contrast Microscopy (PCM) (NIOSH 7400).
- B. Additional samples may be taken at the Environmental Consultant's discretion or as required by the Asbestos Control Regulation. If airborne fiber counts exceed allowable limits, additional samples will be taken as necessary to monitor fiber levels.

1.10 LABORATORY TESTING

- A. The services of a testing laboratory may be employed by the Environmental Consultant to perform laboratory analyses of the air samples. A microscope and technician with a Philadelphia Asbestos Lab License may be set up at the job site, or samples will be sent overnight on a daily basis, so that verbal reports on air sample results can be obtained within 24 hours. The Contractor shall have access to all air monitoring tests and results.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 ADDITIONAL TESTING

- A. The Contractor may conduct his/her own air monitoring and laboratory testing. If he/she elects to do this, the cost of such air monitoring and laboratory testing shall be at no additional cost to the Owner.

3.2 PERSONAL MONITORING

- A. The Environmental Consultant shall not perform air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose.

END OF SECTION

SECTION 01503

TEMPORARY FACILITIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF REQUIREMENTS:

- A. General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

1.3 SUBMITTALS:

- A. Before the Start of Work: Submit the following to the Owner's Representative for review. Begin no work until these submittals are approved by the Owner's Representative.
 - 1. Scaffolding: Submit list of rolling and fixed scaffolding intended for use on the project. Submit sufficient detail to indicate compliance with applicable worker safety regulations or other requirements.
 - 2. Hot water heater: Submit manufacturers name, model number, size in gallons, heating capacity, power requirements.
 - 3. Decontamination Unit Sub-panel: Submit product data.
 - 4. Ground Fault Circuit Interrupters (GFCI): Submit product data.
 - 5. Lamps and Light Fixtures: Submit product data.
 - 6. Self-Contained Toilet Units: Provide product data and name of subcontractor to be used for servicing self-contained toilets. Submit method to be used for servicing.
 - 7. First Aid Supplies: Provide list of contents of first aid kit. Submit in form of check list.
 - 8. Fire Extinguishers: Provide product data. Submit schedule indicating location at job site.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT:

- A. General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

2.2 SCAFFOLDING:

- A. Provide all scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions.
- B. The rungs of all metal ladders, etc. shall be equipped with an abrasive non-slip surface.
- C. All surfaces subject to foot traffic shall have a nonskid surface. Surfaces shall be cleaned as required to remove slippery materials.
- D. At the completion of the removal work, all construction aids shall be cleaned within the work area (encapsulated for wood) and wrapped in one layer of six (6) mil polyethylene sheeting and sealed before removal from the work area.

2.3 WATER SERVICE:

- A. Temporary Water Service Connection: All connections to the Owner's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.
- B. Water Hoses: Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.
- C. Hot Water Heater: Provide UL rated 30 gallon electric hot water heater or on-demand instant water heater to supply hot water for the Decontamination Unit shower. Activate from 30 amp circuit breaker located within the Decontamination Unit subpanel. Provide with relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper. Drip pans shall consist of a 12" X 12" X 6" deep pan, made of 19 gauge galvanized steel, with handles. Drip pan shall be securely fastened to the hot water heater with bailing wire or similar material. Wiring of the hot water heater shall be in compliance with NEMA, NECA, and UL standards.
- D. Hot Water: May be secured from the building hot water system, provided backflow protection is installed at the point of connection as described in this section under Temporary Water Service connection, and if authorized in writing by the Owner's Representative.

2.4 ELECTRICAL SERVICE:

- A. General: Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.
- B. Temporary Power: Provide service to Decontamination Unit subpanel with minimum 60 amp, 2 pole circuit breaker or fused disconnect connected to the buildings main distribution panel. Subpanel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.
- C. Voltage Differences: Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.
- D. Ground Fault Protection: Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate GFCI's exterior to Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination units, exterior, or as otherwise required by national electrical code, OSHA or other authority. Locate the panel exterior to Work Area.
- E. Electrical Power Cords: Use only grounded extension cords; use "hard service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.
- F. Lamps and Light Fixtures: Provide general service incandescent lamps or fluorescent lamps of wattage indicated or required for adequate illumination as required by the work or this section. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide vapor tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture. Use of building lighting fixtures is strictly prohibited.

2.5 TEMPORARY HEAT:

- A. Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the fuel being consumed. Use steam or hot water radiation heat where available, and where not available use electric resistant fin radiation supplied from a branch circuit with ground fault circuit interrupter.

2.6 FIRST AID:

- A. Comply with governing regulations and recognized recommendations within the construction industry.

2.7 FIRE EXTINGUISHERS:

- A. Provide Type “A” fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide type “ABC” dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case. The fire extinguishers shall comply with the applicable recommendations of NFPA Standard 10 “Standard for Portable Fire Extinguishers”. Provide not less than one extinguisher in each work area in the equipment room of the decontamination unit and one outside the work area in the clean room. Distance between fire extinguishers within the work area shall not exceed seventy-five (75) feet.

PART 3 EXECUTION

3.1 SCAFFOLDING:

- A. During the erection and/or moving of scaffolding, care must be exercised so that the polyethylene floor covering is not damaged.
- B. Clean as necessary, debris from non-slip surfaces.
- C. At the completion of abatement work clean all construction aids within the work area, wrap in one layer of 6 mil polyethylene sheeting and seal before removal from the Work Area.

3.2 INSTALLATION, GENERAL:

- A. Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work.
- B. Require that tradesmen accomplishing this work be licensed as required by local authority for the work performed.
- C. Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.
- D. The Contractor shall coordinate with the Building Owner for connection to existing building utilities. No connections shall be executed without prior approval of the building owner.

3.3 WATER SERVICE:

- A. Water connection (without charge) to Owner's existing potable water system is the responsibility of the Contractor. Install using vacuum breakers or other backflow preventer as required by local authority. Hot water shall be supplied at a minimum

temperature of 100 F. Supply hot and cold water to the Decontamination Unit in accordance with Section 01516. In addition, water shall be supplied for all worksite uses.

- B. Maintain hose connections and outlet valves in leak proof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

3.4 ELECTRICAL SERVICE:

- A. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work.
- B. Lockout all existing power to or through the work area as described below. Unless specifically noted otherwise existing power and lighting circuits to the Work Area are not to be used. All power and lighting to the Work Area and Decontamination facilities are to be provided from temporary electrical panel described below.
 - 1. Lockout power to Work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Lock panel and have all keys under control of the Owner's designated Representative.
 - 2. Lockout power to circuits running through Work Area wherever possible by switching off all breakers serving these circuits. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Sign and date danger tag. Lock panel and turn keys over to the Owner's Representative for control. If circuits cannot be shut down for any reason, label at intervals 4'-0" on center with tags reading, "DANGER live electric circuit. Electrocution hazard".
- C. Provide temporary electrical panel sized and equipped to accommodate all electrical equipment and lighting required by the work. Connect temporary panel to existing building electrical system. Protect with circuit breaker or fused disconnect. Locate temporary panel as directed by Owner or Owner's Representative.
- D. Upon request provide and bear all costs associated with off-hour or twenty-four (24) hour electrical service to the work area as required by the Building Owner for Air Monitoring services.
- E. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be at least exposed to damage from construction operations.
- F. Circuit Protection: Protect each circuit with a ground fault circuit interrupter (GFCI) of

proper size located in the temporary panel. Do not use outlet type GFCI devices.

- G. Temporary wiring in the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors. Provide liquid tight enclosures or boxes for wiring devices.
- H. Number of Branch Circuits: Provide sufficient branch circuits as required by the work. All branch circuits are to originate at temporary electrical panel. At minimum provide the following:
 - 1. One Circuit for each HEPA filtered fan unit.
 - 2. For power tools and task lighting, provide one temporary 4-gang outlet in the following locations. Provide a separate 110-120 Volt, 20 Amp circuit for each 4-gang outlet (4 outlets per circuit).
 - a. One outlet in the work area for each 2500 square feet of work area
 - b. One outlet at each decontamination unit, located in equipment room
 - 3. 110-120 volt 20 amp branch circuits with 4-gang outlet for Owner's exclusive use while conducting air sampling during the work as follows:
 - a. One in each work area
 - b. One at clean side of each Decontamination Unit.
 - c. One at each exhaust location for HEPA filtered fan units
 - 4. 110-120 volt 20 amp branch circuits with 4-gang outlet for Owner's exclusive use for conducting final air sampling as set forth in Section 01714 Work Area Clearance as follows:
 - a. Five inside work area
 - b. Two outside work area in location designated by Owner's Representative

3.5 TEMPORARY LIGHTING:

- A. Lockout: Lock out all existing power to lighting circuits in Work Area as described in section 01526 Temporary Enclosures. Unless specifically noted otherwise existing lighting circuits to the Work Area are not to be used. All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel described above.
- B. Provide the following or equivalent where natural lighting or existing building lighting does not meet the required light level.
 - 1. One 200-watt incandescent lamp per 1000 square feet of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature. In corridors and similar traffic areas provide one 100-watt incandescent lamp every 50 feet. In stair ways and at ladder runs, provide one lamp minimum per story,

- located to illuminate each landing and flight. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.
- C. Provide lighting in areas where work is being performed as required to supply a 100 foot candle minimum light level.
 - D. Provide lighting in any area being subjected to a visual inspection as required to supply a 100 foot candle minimum light level.
 - E. Provide lighting in the Decontamination Unit as required to supply a 50 foot candle minimum light level.
 - F. Provide sufficient lighting circuits as required by the work. All lighting circuits are to originate at temporary electrical panel.
 - G. Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel.

3.6 TEMPORARY HEAT:

- A. General: Provide temporary heat where indicated or needed for performance of work.
- B. Maintain a minimum temperature of 70 degrees F where finished work has been installed.
- C. Maintain a minimum temperature of 75 degrees F in the shower of the decontamination unit.
- D. Maintain a minimum temperature of 70 degrees F in the Work Area at all times that work is being performed. At all other times and at the completion of removal work, but before the start of reconstruction work, maintain a minimum temperature of 50 degrees F.
- E. Maintain a minimum temperature of 70 degrees F in the Work Area at all times during and after removal work.

3.8 FIRE EXTINGUISHERS:

- A. Fire Extinguishers: Comply with the applicable recommendations of NFPA Standard 10 “Standard for Portable Fire Extinguishers”. Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area in the Equipment Room and one outside Work Area in the Clean Room.

END OF SECTION

SECTION 01513

TEMPORARY PRESSURE DIFFERENTIAL & AIR FILTRATION SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work included in this section.

1.2 SUBMITTALS

- A. Before Start of Work: Submit design of pressure differential system to the Environmental Consultant for review. Do not begin work until submittal is returned with the Environmental Consultant's approval. Include in the submittal:
 - 1. Number of HEPA filtered fan units required and the calculations necessary to determine the number of machines.
 - 2. Description of projected airflow within work area and methods required to provide adequate airflow in all portions of the work area.
 - 3. Anticipated pressure differential across work area enclosures.
 - 4. Description of methods of testing for correct air flow and pressure differentials.
 - 5. Manufacturer's product data on the HEPA filtered fan units to be used.
 - 6. Location of the machines in the work area.
 - 7. Method of supplying adequate power to the machines and designation of building electrical panel(s) which will be supplying the power.
 - 8. Description of work practices to ensure that airborne fibers travel away from workers.
 - 9. Manufacturer's product data on equipment used to monitor pressure differential between inside and outside of work area.

1.3 QUALITY ASSURANCE

- A. Monitor pressure differential at Personnel and Equipment Decontamination Units with one or more digital manometers equipped with a continuous recorder. Manometers shall be equipped with a warning buzzer which will sound if pressure differential drops below negative 0.02 inches of water column.

PART 2 PRODUCTS

2.1 RECORDING MANOMETERS

- A. The Contractor shall supply a manometer for each Work Area for the purpose of continuously monitoring and recording the pressure differential between the Work Area and the building outside of the Work Area.

2.2 HEPA FILTERED FAN UNITS

- A. General: Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. A minimum of one (1) additional unit shall be installed as a backup to be used during primary unit filter changing and/or upon unit failure. Use units that meet the following requirements:
 - 1. Cabinet: Constructed of durable materials able to withstand damage from rough handling and transportation. The width of the cabinet should be less than 30 inches to fit through standard-size doorways. Provide units whose cabinets are:
 - a. Factory-sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance.
 - b. Arranged to provide access to and replacement of all air filters from intake end.
 - c. Mounted on casters or wheels.
 - 2. Fans: Rated capacity of fan according to usable air-moving capacity under actual operating conditions.
 - 3. HEPA Filters: Provide units whose final filter is the HEPA type with the filter media (folded into closely pleated panels) completely sealed on all edges with a structurally rigid frame.
 - a. Provide units with a continuous rubber gasket located between the filter and the filter housing which is in good condition in order to form a tight seal.
 - b. Provide HEPA filters that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 um dioctylphthalate (DOP) particles when tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL586 label to indicate ability to perform under specified conditions.
 - c. Provide filters that are marked with the name of the manufacturer, serial number, airflow rating, efficiency and resistance, and the direction of test airflow.

- d. Pre-filters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. Provide units with the following pre-filters:
 - 1) First-stage pre-filter: low-efficiency type (e.g., for particles 100 um and larger).
 - 2) Second-stage (or intermediate) filter: medium efficiency (e.g., effective for particles down to 5 um in size).
 - e. Provide units with pre-filters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps.
4. Instrumentation: Provide units equipped with:
- a. Magnahelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed.
 - b. A table indicating the usable air-handling capacity for various static pressure readings on the Magnahelic gauge affixed near the gauge for reference, or the Magnahelic reading indicating at what point the filters should be changed, noting cubic feet per minute (CFM) air delivery at that point.
 - c. Elapsed time meter to show the total accumulated hours of operation.
5. Safety and Warning Devices: Provide units with the following safety and warning devices:
- a. Electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter.
 - b. Automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge.
 - c. Warning lights to indicate normal operation (green), too high a pressure drop across the filters (i.e., filter overloading) (yellow), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge) (red).
 - d. Audible alarm if unit shuts down due to operation of safety systems.
6. Electrical components: Provide units with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit is to be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet are to be grounded.
7. Manufacturers: Subject to compliance with requirements, manufacturers

offering products, which may be incorporated in the work, include, but are not limited to, the following:

- a. Aerospace America, Inc. "Aero-Clean 2000" 900 Harry S. Truman Parkway Bay City, Michigan 48706
- b. Asbestos Control Technology, Inc. "Micro-Trap" 115 Twinbridge Dr Ste G Pennsauken, NJ 08110
- c. Control Resource Systems, Inc. "Hog" 2000 670 Mariner Drive Michigan City, Indiana 46360
- d. Tri-Dim Filter Corporation "ACCU-2M" 93 Industrial Drive Louisa, VA 23093

PART 3 EXECUTION

3.1 AIR CIRCULATION IN THE WORK AREA

- A. Air Circulation: For purposes of this section air circulation refers to either the introduction of outside air to the work area or the circulation and cleaning of air within the work area.
- B. Air circulation in the work area is a minimum requirement intended to help maintain airborne fiber counts at a level that does not significantly challenge the work area isolation measures. The Contractor may also use this air circulation as part of the engineering controls in his worker protection program.
- C. Determining the Air Circulation Requirements: Provide a fully operational air circulation system supplying a minimum of four (4) air changes per hour.
- D. Determine the number of units needed to achieve required air circulation according to the following procedure:
 1. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total air circulation requirement in cubic feet per minute (CFM) for the work area by dividing this volume by the air change rate.

$$\text{Cubic Feet of Air per Minute (CFM)} = \frac{\text{Volume of work area (cu. ft.)}}{15 \text{ minutes}}$$

2. Divide the air circulation requirement (CFM) above by the capacity of HEPA filtered fan unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machine's labeled operating characteristics.

$$\text{Number of Units Needed} = \frac{\text{Air circulation Requirement (CFM)}}{\text{Capacity of Unit with Loaded Filters (CFM)}}$$

3. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

3.2 PRESSURE DIFFERENTIAL ISOLATION

- A. Isolate the work area from all adjacent areas or systems of the building with a pressure differential that will cause a movement of air from outside to inside at any breach in the physical isolation of the work area.
- B. Relative Pressure in the work area: Continuously maintain the work area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope, with a pressure differential of negative 0.02" water column as a minimum.
- C. Accomplish the pressure differential by exhausting a sufficient number of HEPA filtered fan units from the work area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation. The number of units will increase with increased make-up air or leaks into the work area. Determine the number of units required for pressure isolation by the following procedure:
 1. Establish required air circulation in the work area, personnel and equipment decontamination units.
 2. Exhaust a sufficient number of units from the work area to ensure the required air changes/hour.
 3. The required number of units is the number determined above plus one additional unit.
- D. Vent HEPA filtered fan units to the outside of the building unless otherwise authorized in writing by the Environmental Consultant. An Alternative Method Request may be required to vent exhaust into water filled barrels if venting to the exterior is not feasible.
 1. Mount the units to exhaust directly or through disposable ductwork.
 2. Use only new ductwork except for sheet metal connections and elbows.
 3. Use ductwork and fittings of same diameter or larger than the discharge connection on fan unit.
 4. Use inflatable, disposable plastic ductwork in lengths not greater than 100 feet.
 5. Use spiral wire-reinforced flex duct in lengths not greater than 50 feet.
 6. Arrange exhaust as required to inflate the duct to a rigidity sufficient to

prevent flapping.

7. If direction of discharge from fan unit is not aligned with duct, use sheet metal elbow to change direction. Use six feet of spiral wire reinforced flex duct after direction change.
8. Do not combine two (2) or more exhaust ductwork lengths into each other.

3.3 EXHAUST SYSTEM

- A. Pressure differential isolation and air circulation in the work area are to be accomplished by an exhaust system as described below.
- B. Exhaust all units from the work area outside the building unless approved by an Alternative Method Request.
- C. Location of HEPA Filtered Fan Units: Locate fan unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible. This may be accomplished by positioning the HEPA filtered fan unit(s) at a maximum distance from the worker access opening or other makeup air sources.
- D. Place the intake end of the HEPA unit at the perimeter of the work area enclosure or locate its exhaust duct through an opening in the plastic barrier or wall covering. Seal plastic around the unit or duct with tape.
- E. Vent to the outside of the building, unless authorized in writing by the Owner's Representative and approved by an Alternative Method Request.
- F. Decontamination Units: Arrange the work area and decontamination units so that the majority of make-up air comes through the decontamination units. Use only the personnel or equipment decontamination unit at any one time and seal the other so that make up air passes through the unit in use.
- G. Supplemental Makeup Air Inlets: Provide, where required, for proper airflow through the work area in a location approved by the Asbestos Technician. This can be done by making louvered openings in the plastic sheeting that allow air from outside the building into the work area. Locate auxiliary makeup air inlets as far as possible from the fan unit(s) (e.g., on an opposite wall), off the floor (preferably near the ceiling), and away from barriers that separate the work area from any clean areas. Cover with flaps to reseal automatically if the pressure differential system should shut down for any reason. Spray flap and around opening with spray adhesive so that if flap closes meeting surfaces are both covered with adhesive. Use adhesive that forms contact bond when dry.

3.4 RECIRCULATION SYSTEM

- A. Pressure differential isolation and air circulation in the work area are to be accomplished by a recirculation system as described below:
 - 1. Recirculate air in the work area through HEPA filtered fan units to accomplish air circulation requirements of this section.
 - 2. Location of Fan Units: Locate HEPA filtered fan units so that air is circulated through all parts of the work area, and so that required pressure is maintained at all parts of work area geometry. Move units as necessary so that in any location where asbestos-containing materials are being disturbed the discharge from one HEPA filtered fan unit is blowing contamination away from workers. Direct airflow in these locations so that it is predominantly toward workers' backs at the breathing zone elevation.

3.5 AIR CIRCULATION IN DECONTAMINATION UNITS

- A. Pressure Differential Isolation: Continuously maintain the pressure differential required for the work area in the:
 - 1. Personnel Decontamination Unit: Across the shower room with the equipment room at a lower pressure than the clean room.
 - 2. Equipment Decontamination Unit: Across the holding room with the wash room at a lower pressure than the clean room.
- B. Air Circulation: Continuously maintain air circulation in decontamination units at the same level as required for the work area.
- C. Air Movement: Arrange air circulation through the personnel unit so that it produces a movement of air from the clean room through the shower room into the equipment room.

3.6 USE OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

- A. General: Each unit shall be serviced by a dedicated minimum 115V-20A circuit with ground fault circuit interrupter (GFCI) supplied from temporary power supply installed under requirements of Section 01503 "Temporary Facilities". Do not use existing branch circuits to power fan units.
- B. Testing the System: Test pressure differential system before any asbestos-containing material is wetted or removed. After the work area has been prepared, the decontamination facility set up, and the fan unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of pressure differential system to Asbestos Project Inspector.
- C. Demonstrate condition of equipment for each HEPA filtered fan unit and pressure

differential monitoring equipment including proper operation of the following:

1. Squareness of HEPA filter.
 2. Condition of seals.
 3. Proper operation of lights.
 4. Proper operation of automatic shut down if exhaust is blocked.
 5. Proper operation of alarms.
 6. Proper operation of magnehelic gauge.
 7. Proper operation and calibration on pressure-monitoring equipment.
- D. Demonstrate operation of the pressure differential system for the Asbestos Project Inspector. Including, but do not limited to, the following:
1. Plastic barriers and sheeting move slightly in toward the work area.
 2. Curtain of decontamination units move slightly in toward the work area.
 3. There is a noticeable movement of air through the decontamination unit.
 4. Use smoke tube to demonstrate air movement from clean room through shower room to equipment room.
 5. Use smoke tubes to demonstrate a definite motion of air across all areas in which work is to be performed.
- E. Modify the pressure differential system as necessary to demonstrate successfully the above.
- F. Use of system during abatement operations:
1. Start fan units before beginning work (before any asbestos-containing material is disturbed). After abatement work has begun, run units continuously to maintain a constant pressure differential and air circulation until decontamination of the work area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.
 2. Do not shut down air pressure differential system during encapsulating procedures, unless authorized by the Asbestos Technician in writing. Supply sufficient pre-filters to allow frequent changes.
 3. Start abatement work at a location farthest from the fan units and proceed toward them. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and fan units are operating again.
 4. At completion of abatement work, allow fan units to run as specified under

Section 01711, to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the work area with clean makeup air. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement work.

G. Dismantling the System:

1. When a final inspection and the results of final air tests indicate that the area has been decontaminated, fan units may be removed from the work area. Before removal from the Work Area, remove and properly dispose of pre-filters, secondary filters, and HEPA filters, decontaminate exterior of machine and seal intake to the machine with 6-mil polyethylene to prevent environmental contamination from the filters.

END OF SECTION

SECTION 01526

TEMPORARY ENCLOSURES AND WORK AREA PREPARATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 SUBMITTALS

- A. Before the start of work the Contractor shall submit a work plan to the Environmental Consultant for review. The Contractor shall not begin work until work plan submittals are approved by the Environmental Consultant. The work plan shall identify specific engineering controls and removal methods to be utilized for each work area.

1.3 TEMPORARY ENCLOSURES - CATEGORY I AND II NON-FRIABLE ACM MATERIAL

- A. Primary Barriers shall not be required for work areas where Category I and II non-friable materials are to be removed using EPA approved non-friable removal methods.
- B. Localized isolation consisting of critical barriers, drop cloths, splash guards if needed, and air filtration units shall be required.

1.4 TEMPORARY ENCLOSURES – FRIABLE ACM

- A. Removal of asbestos-containing materials shall be accomplished utilizing full containment procedures techniques as outlined in the City of Philadelphia Asbestos Control Regulation, Chapter 6-600, Section VI STANDARDS.
- B. Air filtration units and negative pressure enclosures shall be required.

PART 2 PRODUCTS

2.1 SHEET PLASTIC

- A. Polyethylene Sheet: Provide flame-resistant 6 mil polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films. Provide largest size possible to minimize seams, 6-mil thick, frosted or black as indicated.

2.2 MISCELLANEOUS MATERIALS

- A. Duct Tape: Provide duct tape (or approved equivalent) in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.
- B. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
- C. Asbestos warning signs for posting at the perimeter of all work areas, as required by EPA and OSHA.
- D. Flame resistant kiln dried lumber, any grade, 2" x 4" or 2" x 3" wood stud, PVC piping, metal stud or equivalent, in lengths appropriate for wall construction.
- E. Flame resistant plywood sheathing (3/8" thick minimum) shall be used at all locations called for in the specifications. This may include, but is not limited to, isolation barriers, exhaust manifolds and personnel and waste/equipment decontamination units.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The work area shall mean the location where asbestos-abatement work occurs. It is a variable of the extent of work of the Contract. It may be a portion of a room, a single room, or a complex of rooms. A "work area" is considered contaminated during the work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-control work.
- B. The Contractor shall inspect each work location with the Asbestos Project Inspector. The Contractor and Asbestos Project Inspector shall agree on conditions of materials and worksite and select the appropriate abatement procedures. Should the Asbestos Project Inspector and Contractor not be in agreement, the Owner's Representatives and Environmental Consultant shall make the final decision.
- C. Completely isolate and seal the work area(s) from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. All seals and critical barriers shall be maintained in an air-tight condition to allow for clearance air testing to be conducted while abatement activities are in progress in adjacent areas. Should any area beyond the work area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in Section 01711. Perform all such required cleaning or decontamination at no additional cost to the owner.
- D. Place all tools, scaffolding, staging, etc. necessary for the work in the area to be isolated prior to completion of work area isolation.
- E. Lockout/tag-out all power to work area in accordance with Section 01503.

3.2 EMERGENCY PRECAUTIONS

- A. The Contractor shall prepare a contingency plan for emergencies including fire, accident, power failure, air pressure differential system failure, supplied air system failure, or any other event that may require modification or abridgment of decontamination or work area isolation. Note that nothing in this Specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.
- B. The Contractor shall provide barricades and adequate protection to safely prevent accidental entrance to the abatement area by any building occupants.
- C. Before the Contractor starts actual abatement of asbestos material, the local fire department and ambulance crews shall be notified by the Contractor as to the dangers of entering the work area. The Contractor shall make every effort to help these agencies and form plans of action, should their personnel need to enter the contaminated area.
- D. Local medical emergency personnel, both ambulance crews and hospital emergency room staff, shall be notified by the Contractor as to the possibility of having to handle injured work persons who are contaminated with asbestos dust. They shall be advised on safe decontamination procedures.
- E. First aid shall comply with the governing regulations and all recognized recommendations within the construction industry.
- F. Except as otherwise indicated, submit special reports directly to the Owner within one day of occurrence requiring special report, with a copy to the Owner's Representative, Environmental Consultant and others affected by the occurrence.

3.3 EMERGENCY EXITS

- A. Provide emergency exits and emergency lighting as set forth below:
 - 1. Emergency Exits: At each existing exit door from the work area provide the following means for emergency egress:
 - a. Arrange exit door so that it is secure from outside the Work Area but permits exiting from the Work Area.
 - b. Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1" wide. Hang a razor knife on a string beside outline. Arrange Critical and Primary barriers so that they can be easily cut with one pass of the razor knife. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2" thick.

3.4 CONTROLLED ACCESS

- A. Isolate the Work Area to prevent unauthorized entry into work area or

surrounding controlled areas. Accomplish isolation by the following:

1. After receiving authorization from the Asbestos Project Inspector, lock all doors into the Work Area, or, if doors cannot be locked, chain shut. Cover any signs that direct emergency exiting, either outside or inside of the Work Area, to locked doors. Do not obstruct doors required for emergency exits from the Work Area or from building.
 2. Arrange the Work Area so that the only access into the Work Area is through lockable doors to personnel and equipment decontamination units.
 3. Install temporary shuttered, lockable doors with entrance type locksets that are key lockable from the outside and always unlocked and operable from the inside. Do not use deadbolts or padlocks.
- B. Provide warning signs at each locked door leading to work area printed in both English and Spanish reading as follows:

DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

- C. Provide spacing between respective lines at least equal to the height of the respective upper line.
- D. Provide Warning Signs (in English and Spanish) at each locked door leading to work area reading as follows:

LEGEND	NOTATION
KEEP OUT	3" Sans Serif Gothic or Block
BEYOND THIS POINT	1" Sans Serif Gothic or Block
ASBESTOS ABATEMENT WORK	1" Sans Serif Gothic or Block
IN PROGRESS	1" Sans Serif Gothic or Block
BREATHING ASBESTOS DUST MAY BE	14 Point Gothic
HAZARDOUS TO YOUR HEALTH	

3.5 ALTERNATE METHODS OF ENCLOSURE

- A. NA

3.6 RESPIRATORY AND WORKER PROTECTION

- A. Before proceeding beyond this point in providing Temporary Enclosures:
1. Provide Worker Protection per Section 01560.

2. Provide Respiratory Protection per Section 01562.
3. Provide Personnel Decontamination Unit per Section 01563.

3.7 ISOLATION BARRIERS

- A. When an isolation barrier is required, it shall consist of partitions constructed of a minimum of: conventional 2x3 wood, polyvinyl chloride piping, or metal stud framing, on a sixteen-inch maximum center-to-center to support barriers in all openings larger than thirty-two square feet, except where any one dimension is one foot or less.
- B. A solid construction material, such as plywood, of at least 3/8 inch thickness shall be applied to the work side of the framing where the barrier could be subject to damage.
- C. Partitions shall be plasticized with Primary Barriers as described below.
- D. All accessible walls surrounding the area shall contain a minimum 18" square transparent viewing port made of shatterproof material greater than or equal to 0.125" thickness located at a height appropriate for accessible viewing and in such a manner so as to maximize visibility of the work area. Viewing ports shall be maintained in a clear and unobstructed manner at all times.

3.8 CRITICAL BARRIERS

- A. Completely separate the Work Area(s) from other portions of the building and the outside by closing all openings with two (2) independent layers of sheet plastic barriers at least 6 mil in thickness, individually sealed and sealing cracks and irregular openings with expanding fire-rated foam. All openings shall be air-tight and shall remain in place until clearance sampling indicates acceptable fiber concentration levels have been achieved.
- B. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, elevator shafts, convectors and speakers, and other openings into the Work Area(s) with two (2) independent layers of polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seals until all work including project decontamination is completed.
- C. Provide two (2) individual layers of Sheet Plastic barriers at least 6 mil in thickness as required to seal openings completely from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement.
- D. Fire-rated expandable foam may be used to properly seal any irregular openings not conducive to sealing with polyethylene sheeting.
- E. Mechanically support sheet plastic independently of duct tape or spray cement seals so that seals do not support the weight of the plastic. The following are

acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Owner's Representative:

1. Plywood squares 6" x 6" x 3/8" held in place with one smooth masonry nail or electro-galvanized common nail driven through center of the plywood and duct tape on plastic so that plywood clamps the plastic to the wall. Locate plywood squares at each end, corner and at maximum 4 feet on centers.
2. Nylon or polypropylene rope or wire with a maximum unsupported span of 10 feet, minimum 1/4" in diameter suspended between supports securely fastened on either side of opening at maximum 1 foot below ceiling. Tighten rope so that it has 2" maximum dip. Drape plastic over rope from outside work area so that a two foot long flap of plastic extends over rope into work area. Staple or wire plastic to itself 1" below rope at maximum 6" on centers to form a sheath over rope. Lift flap and seal to ceiling with duct tape or spray cement. Seal loop at bottom of flap with duct tape. Erect entire assembly so that it hangs vertically without a "shelf" upon which debris could collect.

- F. Provide Pressure Differential System per Section 01513.
- G. Clean housings and ducts of all debris or overspray materials prior to erection of any Critical Barrier that will restrict access.

3.9 PREPARE AREA:

- A. Scaffolding: If fixed scaffolding is to be used to provide access, HEPA vacuum and wet clean area prior to scaffolding installation.
- B. Remove all electrical and mechanical items, such as lighting fixtures, clocks, diffusers, registers, escutcheon plates, etc. which cover any part of the surface to be worked on with the work.
- C. Remove all general construction items such as cabinets, casework, door and window trim, moldings, ceilings, trim, etc., which cover the surface of the work as required to prevent interference with the work.
- D. Clean all furniture, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning, as specified in Section 01712 Cleaning and Decontamination Procedures, prior to being moved or covered. All equipment, furniture, etc. is to be deemed contaminated unless specifically declared as uncontaminated on the drawings or in writing by Environmental Consultant.
- E. Clean all surfaces in the Work Area with a HEPA filtered vacuum or by wet wiping prior to the installation of the primary barrier.

3.10 PRIMARY BARRIER:

- A. Protect building and other surfaces in the Work Area from damage from water and high humidity or from contamination from asbestos-containing debris, slurry or high airborne fiber levels by covering with a primary barrier as described below.
- B. Sheet Plastic: Protect floor surfaces in the Work Area with two (2) layers of six (6) mil plastic sheeting and wall surfaces with two (2) layers of six (6) mil. thick plastic sheeting, or as otherwise directed on the Contract Drawings.
 - 1. Protect floor surfaces in the Work Area with two (2) layers of six (6) mil plastic sheeting. Wall sheeting must extend up the wall surfaces a minimum of 12" in an alternating fashion with the wall sheeting or as otherwise directed on the Contract Drawings.
 - 2. Cover all walls in the Work Area including "Critical Barrier" sheet plastic barriers with two layers of polyethylene sheeting, at least 6 mil in thickness, mechanically supported and sealed with duct tape and spray-glue, so as to overlap floor sheeting by at least 12 inches in the same manner as "Critical Barrier" sheet plastic barriers. Tape all joints including the joining with the floor covering with duct tape. Wall sheet barriers shall extend to the floor.
 - 3. All vertical and horizontal surfaces except those of asbestos-containing materials shall be sealed with polyethylene sheeting. This includes all non-ACM pipe insulation.
 - 4. Stairs and Ramps: Do not cover stairs or ramps with unsecured sheet plastic. Where stairs or ramps are covered with plastic, provide ¾" exterior grade plywood treads securely held in place, over the plastic. Do not cover rungs or rails with any type of protective materials.
 - 5. Repair of Damaged Polyethylene Sheeting: Remove and replace plastic sheeting which has been damaged by removal operations or where seal has failed allowing water to seep between layers. Remove affected sheeting and wipe down entire area. Install new sheet plastic only when area is completely dry.
- C. Viewing Port: All accessible walls surrounding the area shall contain a minimum 18"square viewing port made of shatterproof material greater than or equal to 0.125" thickness located at a height appropriate for accessible viewing and in such a manner as to maximize visibility of the work area.

3.11 STOP WORK

- A. If the Critical barrier falls or is breached in any manner, stop work immediately. Do not start work until authorized in writing by the Asbestos Project Inspector.

3.12 EXTENSION OF THE WORK AREA

- A. Extension of the Work Area: If the Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add the affected area to the work area, enclosing it as required by this Section of the specification and decontaminate it as described in Section 01711 Project Decontamination.

3.13 CONTAINMENT BAG REMOVAL

- A. See Section 02079 Containment Bag Removal for Enclosure and Work Area Preparation for use during Containment Bag Removal of asbestos-containing Joint Insulation and asbestos-containing Pipe Insulation.

END OF SECTION

SECTION 01560

WORKER PROTECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This section describes the equipment and procedures required for protecting workers and site visitors against asbestos contamination and other workplace hazards except for respiratory protection.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Respiratory Protection is specified in Section 01562.

1.4 WORKER TRAINING

- A. State and Local License: All workers are to be trained and currently certified as asbestos workers and/or supervisors by the Commonwealth of Pennsylvania, Department of Labor and Industry and shall provide evidence of such certification upon request.
- B. Train, in accordance with 29 CFR 1926.1101(k)(8), all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:
 - 1. Methods of recognizing asbestos
 - 2. Health effects associated with asbestos
 - 3. Relationship between smoking and asbestos in producing lung cancer
 - 4. Nature of operations that could result in exposure to asbestos
 - 5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
 - a. Engineering controls
 - b. Work practices
 - c. Respirators
 - d. Housekeeping procedures
 - e. Hygiene facilities

- f. Protective clothing
 - g. Decontamination procedures
 - h. Emergency procedures
 - i. Waste disposal procedures
- 6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
- 7. Appropriate work practices for the work
- 8. Requirements of medical surveillance program
- 9. Review of 29 CFR 1926.1101 (amended), including appendices
- 10. Pressure differential systems
- 11. Work practices including hands-on or on-job training
- 12. Personal decontamination procedures
- 13. Air monitoring, personal and area

1.5 MEDICAL EXAMINATIONS

- A. Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926.1101(m). In addition, provide an evaluation of each individual's ability to work in environments capable of producing heat stress in the worker.

1.6 SUBMITTALS

- A. Before start of work submit the following to the Owner's Representative for review. Do not start work until these submittals are approved by the Environmental Consultant.
 - 1. State and Local License: Submit evidence that all workers have been trained and licensed as asbestos workers by the Commonwealth of Pennsylvania Department of Labor and Industry.
 - 2. Certificate of Worker Acknowledgement: Submit an original signed copy of the Certificate of Worker's Acknowledgement for each worker who is to be at the job site or enter the Work Area.
 - 3. Report from a medical examination conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:
 - a. Name and Social Security Number

- b. Physicians written opinion from examining physician including at a minimum the following:
 - 1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
 - 2) Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
 - 3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
 - c. Copy of information that was provided to physician in compliance with 29 CFR 1926.
 - d. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.
4. Notarized Certifications: Submit certification signed by an officer of the abatement contracting firm and notarized confirming that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.
5. Copies of OSHA-approved confined space training (1910.146) certification for all workers entering OSHA-defined confined spaces.

PART 2 PRODUCTS

2.1 PROTECTIVE CLOTHING

- A. Clothing: Provide fire-retardant “Tyvek” disposable protective clothing consisting of full-body coveralls, headcovers, and boots as required by the most stringent OSHA standards applicable to the work and as manufactured by DuPont or approved equal. Eye protection, hard hats, gloves, and safety shoes shall be worn. They shall be in accordance with ANSI Z89.1 (1969) and ANSI Z41.1 (1967).
- B. Boots: Provide work boots with non-skid soles, and where required by OSHA, foot protectives, for all workers. Provide boots at no cost to workers. Paint uppers of all boots red with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with asbestos-containing material. Dispose of boots as asbestos- contaminated waste at the end of the work.
- C. Hard Hats: Provide head protection (hard hats) as required by OSHA for all workers, and provide 4 spares for use by Owner's Representative, Project Administrator, and Owner. Label hats with same warning labels as used on disposal bags. Require hard hats to be worn at all times that work is in progress

that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the Work Area throughout the work. Thoroughly clean, decontaminate and bag hats before removing them from Work Area at the end of the work.

- D. Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the work.
- E. Gloves: Provide work gloves to all workers and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area. Dispose of gloves as asbestos-contaminated waste at the end of the work.

2.2 ADDITIONAL PROTECTIVE EQUIPMENT

- A. Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Owner's Representative, Environmental Consultants, and other authorized representatives who may inspect the jobsite. Provide two (2) respirators and six (6) complete coveralls and where applicable provide six (6) respirator filter changes per day. Sufficient HEPA cartridges for powered air-purifying respirators shall be provided for the workers to change during the work shift. No HEPA cartridges shall be used for longer than three (3) eight (8) hour work shifts. The respirators shall be worn at all times when in the contaminated area. There shall be no exceptions.

PART 3 EXECUTION

3.1 GENERAL

- A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of fiber count in the Work Area.
- B. Each time the Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

3.2 DECONTAMINATION PROCEDURES

- A. Require all workers to adhere to the following personal decontamination procedures whenever they leave the Work Area:
 - 1. Type C Supplied Air or Powered Air-Purifying Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area:
 - a. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.

- b. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:
 - 1) Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.
 - 2) With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.
 - 3) Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.
 - 4) Carefully wash facepiece of respirator inside and out.
 - 5) If using PAPR, shut down in the following sequence, first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.
 - 6) Shower completely with soap and water.
 - 7) Rinse thoroughly.
 - 8) Rinse shower room walls and floor prior to exit.
 - c. Proceed from shower to Clean Room and change into street clothes or into new disposable work items.
2. If air-purifying negative pressure respirators are being utilized, require that all workers use the following decontamination procedures as a minimum requirement whenever leaving the Work Area with a half or full face cartridge-type respirator:
- a. When exiting area, remove disposable coveralls, disposable headcovers and disposable footwear covers or boots in the equipment room.
 - b. Still wearing respirators. Proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator and filters to avoid inhaling asbestos fibers while showering. The following procedure is required as a minimum:

- 1) Thoroughly wet body from neck down.
 - 2) Wet hair as thoroughly as possible without wetting the respirator filter if using an air purifying type respirator.
 - 3) Take a deep breath, hold it and/or exhale slowly, complete wetting of hair thoroughly wetting face, respirator and filter (air purifying respirator). While still holding breath, remove respirator and hold it away from face before starting to breath.
 - 4) Dispose of wet filters from air purifying respirator after each use.
 - 5) Carefully wash facepiece of respirator inside and out.
 - 6) Shower completely with soap and water.
 - 7) Rinse thoroughly.
 - 8) Rinse shower room walls and floor to exit
- c. Proceed from shower to clean room and change into street clothes or into new disposable work suit.
- B. Within the Work Area: Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, or drink, workers shall follow the procedure described above, then dress in street clothes before entering the non-work areas of the building. **Smoking is not permitted in any part of the building complex.**

END OF SECTION

SECTION 01562

RESPIRATORY PROTECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials in proper respiratory use. Require that each worker properly wear a respirator in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated and cleared through air monitoring. Use respiratory protection appropriate for the fiber level encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.

1.3 STANDARDS

- A. Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.
 - 1. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910.1001 and 1910.134 as well as 29 CFR 1926.1101.
 - 2. CGA - Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration if, and Specification G-7.1 "Commodity Specification for Air".
 - 3. CSA - Canadian Standard Association, Rexdal, Ontario, Standard Z180.1-1978, "Compressed Breathing Air".
 - 4. ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2-1992.
 - 5. NIOSH - National Institute for Occupational Safety and Health.
 - 6. MSHA - Mine Safety and Health Administration.

1.4 SUBMITTALS

- A. Before Start of Work submit the following to the Environmental Consultant for review. Do not begin work until these submittals are approved by the Environmental Consultant.
 - 1. Product Data: Submit manufacturer's product information for each component used, including NIOSH and MSHA Certifications for each component in an assembly and/or for entire assembly.
 - 2. Operating Instruction: Submit complete operating and maintenance instructions for all components and systems as a whole. Submittal is to be in bound manual form suitable for field use.
 - 3. Respiratory Protection Program: Submit Contractor's written respiratory protection program manual as required by OSHA 1926.1101.

1.5 DELIVERY

- A. Deliver replacement parts, etc., not otherwise labeled by NIOSH or MSHA to job site in manufacturer's containers.

PART 2 EQUIPMENT

2.1 AIR PURIFYING RESPIRATORS

- A. Respirator Bodies: Provide half face or full face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.
- B. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH Certification.
- C. Non-permitted respirators: The use of single use, disposable or quarter face respirators is strictly forbidden.

2.2 POWERED AIR PURIFYING RESPIRATORS

- A. Respirator Bodies: Provide full face type powered respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.
- B. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI

Z228.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH Certification.

PART 3 EXECUTION

3.1 GENERAL

- A. Respiratory Protection Program: Comply with ANSI Z88.2 - 1980 "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and 1926.
- B. Require that respiratory protection be used at all times that there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.
- C. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Section 01714.
- D. Regardless of Airborne Fiber Levels, require that the minimum level of respiratory protection used be half-face negative pressure air-purifying respirators with high efficiency filters.
- E. Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose.
- F. No one having a beard or other facial hair that will interfere with the mask seal will be permitted to don a respirator and enter any Work Area.

3.2 FIT TESTING

- A. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a Certified Industrial Hygienist. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing has been provided.
- B. On a weekly basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.
- C. Upon each wearing, require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

3.3 TYPE OF RESPIRATORY PROTECTION REQUIRED

- A. The Asbestos Contractor shall, at a minimum, provide the following respiratory protection:
 - 1. Air-Purifying Respirators: APR(s), Negative pressure, full-face or half-face respirators shall be worn during the Work Area preparation phase of

the project (at a minimum). There will be no exceptions. If air monitoring results show that fiber counts meet or exceed the action level, defined as half of the respirator use limit concentration (5f/cc), then Powered Air-Purifying respirators shall be used.

2. Powered Air-Purifying Respirators: PAPR(s), Positive pressure, full-face respirators or Type "C" respirators as specified shall be worn during removal and cleanup phases of the project (at a minimum). There will be no exceptions. If air monitoring results show that fiber counts meet or exceed (50f/cc) action level defined as half of the respirator use limit concentration, then Type "C" respirators shall be used.

3.4 PERMISSIBLE EXPOSURE LIMIT (PEL)

- A. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed 0.1 fibers/cubic centimeter.

3.5 RESPIRATORY PROTECTION FACTOR

- A. OSHA Respirator Type Protection Factor:
 1. Air purifying: PF=10 - Negative pressure respirator high efficiency filter half-face piece.
 2. Air purifying: PF=50 - Negative pressure respirator High efficiency filter full-face piece.
 3. Powered Air Purifying (PAPR): PF=100 - Positive pressure respirator high efficiency filter half or full-face piece.

3.6 AIR PURIFYING RESPIRATORS

- A. Air purifying-half- or full-face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, filter cartridges and facemask be washed each time a worker leaves the Work Area.

3.7 POWERED AIR PURIFYING RESPIRATORS

- A. Powered air purifying full-face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in

filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, are washed each time a worker leaves the Work Area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

END OF SECTION

SECTION 01563

DECONTAMINATION UNITS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Refer to Section 01503 Temporary Facilities for electrical requirements and requirements relative to connection of decontamination facilities to utilities such as water and electric.

1.3 SUBMITTALS:

- A. Before the Start of Work: Submit the following to the Environmental Consultant for review. Do not begin work until these submittals are approved by the Environmental Consultant.
- B. Personnel Decontamination Unit: Provide shop drawing showing location and assembly of personnel decontamination units.
- C. Equipment Decontamination Unit: Provide shop drawing showing location and assembly of equipment decontamination units.
- D. Shower Pan: Provide shop drawing.
- E. Shower Walls: Provide product data.
- F. Shower Head and Controls: Provide product data.
- G. Filters: Provide product data and shop drawing of installation on the decontamination unit.
- H. Hose Bibb: Provide product data.
- I. Shower Stall: For wash down station provide product data and shop drawing showing location and modifications.
- J. Elastomeric membrane: Provide product data.
- K. Lumber: Provide product data on fire resistance treatment.
- L. Sump Pump: Provide product data.
- M. Signs: Submit samples of signs to be used.

PART 2 PRODUCTS

2.1 SUPPLIES

- A. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil thick as indicated, frosted or black as indicated.
- B. Reinforced Polyethylene Sheet: Where plastic sheet is the only separation between the Work Area and the building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil reinforced thick as indicated.
- C. Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.
- D. Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
- E. Shower Pan: Provide one piece stainless steel shower pan with a minimum 6" depth.
- F. Shower Walls: Provide a shower with walls fabricated from rigid, impervious, waterproof material, either corrugated fiberglass roofing or equivalent. Structurally support as necessary for stability.
- G. Shower Head and Controls: Provide a factory-made shower head producing a spray of water which can be adjusted for spray size and intensity. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.
- H. Filters: Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through the secondary filter.
 - 1. Primary Filter - Passes particles 20 microns and smaller.
 - 2. Secondary Filter - Passes particles 5 microns and smaller.
- I. Hose Bibb: Provide heavy bronze angle type with wheel handle, vacuum breaker, and ¾" National Standard male hose outlet.
- J. Shower Stall: For the Wash down Station, provide a leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Equip with hose bibb, as specified

in this section, mounted at approximately 4'-0" above drain pan. Connect the drain to a reservoir, pump water from the reservoir through the above specified water filters and store for use in the work area or discharge to the public sanitary sewer system after obtaining written permission from the City of Philadelphia Water Department. Mount filters inside shower stall on back wall beneath hose bib.

- K. Elastomeric membrane: Provide uniform flat sheets of flexible sheet roofing material fabricated from EPDM (ethylene propylene diene monomers) or Neoprene (polychloroprene), in a nominal 45 mil thickness.
- L. Lumber: Provide kiln dried fire retardant lumber and plywood sheathing of any grade or species.

PART 3 EXECUTION

3.1 PERSONNEL DECONTAMINATION UNIT:

- A. Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Clean Room, Shower Room, Equipment Room. Require all persons, without exception, to pass through the Personnel Decontamination Unit for entry into and exiting from the Work Area for any purpose. Provide temporary heating and lighting within the Personnel Decontamination Units as necessary to provide safe and comfortable conditions. Decontamination chamber doors shall be of sufficient height and width to enable replacement of equipment that may fail and to safely stretch or carry an injured worker from the site without destruction of the chamber or unnecessary risk to the integrity of the Work Area. Such doors must be at least three (3) feet wide, and the distance between sets of flaps must be at least three (3) feet. It shall also have a lockable, louvered door. When located outdoors, the decontamination unit shall be waterproof and windproof. It shall be constructed utilizing fire-retardant lumber and shall be sheathed with 3/8" minimum thickness plywood.
- B. Clean Room: Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing.
 - 1. Construct using two (2) layers of opaque polyethylene sheeting, at least 6 mil thickness, to provide an airtight seal between the Clean Room and the rest of the building.
 - 2. Locate so that access to the Work Area from the Clean Room is through the Shower Room.
 - 3. Separate the Clean Room from the building by a sheet plastic flapped doorway with overlapping flaps, and a lockable, louvered door.
 - 4. Require workers to remove all street clothes in this room, dress in clean, disposable coveralls, and don respiratory protection equipment. Do not

- allow asbestos-contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked from the showers.
5. Maintain the floor of the Clean Room. Ensure that the floor is dry and clean at all times. Do not allow overflow of water from the shower to wet the floor in the Clean Room.
 6. Wet wipe all surfaces twice after each shift change with a disinfectant solution.
 7. Provide posted information for all emergency phone numbers and procedures.
 8. Provide one (1) storage locker per employee.
- C. Shower Room: Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Clean Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.
1. Construct this room by providing a shower pan and 2 shower walls in a configuration that will cause water that will run down the walls to drip into the pan. Install a freely draining wooden floor in the shower pan at an elevation level with the top of the shower pan.
 2. Separate this room from the rest of the building with airtight walls fabricated of two (2) layers of opaque 6 mil polyethylene.
 3. Separate this room from the Clean Room with airtight walls fabricated of 6 mil polyethylene.
 4. Provide splash proof entrances to Clean Room with doors of overlapping flapped polyethylene.
 5. Provide shower head and controls supplied with hot and cold water adjustable within the shower. Provide one (1) shower for every eight (8) workers based upon largest shift size. Provide one (1) separate shower for every eight (8) women workers.
 6. Provide a continuously adequate supply of liquid bath soap and shampoo and maintain in sanitary condition.
 7. Provide a continuously adequate supply of disposable bath towels.
 8. Arrange so that water from showering does not splash into the Clean or Equipment Rooms.
 9. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the Work Area.
 10. Used filters shall be disposed of as asbestos-containing waste material.

11. All waste water shall be containerized as asbestos containing waste, solidified using an approved polymer for transport and disposal or collected and filtered using a five (5) micron particle size filtration system.
 12. Properly filtered waste water may be disposed of into the sanitary sewer system only after obtaining written approval from the City of Philadelphia Water Department.
- D. Equipment Room (contaminated area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.
1. Separate this room from the Work Area by a 6 mil polyethylene overlapping flapped doorway.
 2. Separate this room from the rest of the building with airtight walls fabricated from two (2) layers of opaque 6 mil polyethylene.
 3. Separate this room from the Shower Room and Work Area with airtight walls fabricated from 6 mil polyethylene.
 4. Provide a drop cloth layer of sheet plastic on floor in the Equipment Room for every expected shift change. Roll the drop cloth layer of plastic from the Equipment Room into the Work Area after each shift change. Replace the drop cloth before the next shift change. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.
- E. Work Area: Separate the Work Area from the Equipment Room by polyethylene barriers. If the airborne asbestos level in the Work Area is expected to be high, as in dry removal, add an intermediate cleaning space between the Equipment Room and the Work Area. Damp wipe clean all surfaces after each shift change. Provide one additional floor layer of 6 mil polyethylene per shift change and remove the contaminated layer after each shift.
- F. Decontamination Sequence: Require that all workers and authorized visitors adhere to the following sequence when entering or leaving the Work Area.
1. All individuals that enter the Work Area shall sign the entry log, located in the Clean Room, upon each entry and exit.
 2. Entering the Work Area: A worker enters the Clean Room and removes street clothing, puts on clean disposable overalls and respirator, and passes through the Shower Room into the Equipment Room, then into the Work Area.
 - a. Any additional clothing and equipment that is needed by the worker shall be obtained and donned in the Equipment Room.
 - b. Worker proceeds to Work Area.
 3. Exiting the Work Area:
 - a. Before leaving the Work Area, the worker will be required to remove all gross contamination and debris from the outside of the

respirator, and protective clothing by wet wiping and HEPA vacuuming.

- b. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.
- c. Extra work clothing such as boots, hard hats, goggles, gloves are to be stored in the contaminated end of the Equipment Room.
- d. Disposable coveralls are placed in a bag for disposal with other material.
- e. Require that Decontamination procedures found in Section 01560 are followed by all individuals leaving the Work Area.
- f. After showering, the worker moves to the Clean Room and dresses in either new coveralls for another entry or street clothes if leaving.

3.2 CONSTRUCTION OF THE DECONTAMINATION UNITS:

- A. Walls and Ceiling: Construct airtight walls and ceiling using two (2) layers of polyethylene sheeting, at least 6 mil in thickness. Attach to existing building components or a temporary framework. If the decontamination unit is located exterior of the building, the decontamination unit shall be sheathed with ½" fire retardant plywood.
- B. Floors: Use two (2) layers (minimum) of 6 mil polyethylene sheeting to cover the floors in all areas of the Decontamination Units. Use only clear plastic to cover the floors.
- C. Lockable Louvered Door: An entrance door to the clean room shall be equipped with a louvered/shuttered opening and shall be lockable from the outside. The lockset shall be equipped to remain unlocked from the inside at all times and shall not consist of a padlock or clasp type lock.
- D. Flap Doors: Use three (3) overlapping sheets of 6 mil polyethylene sheeting with openings a minimum of four feet (4') wide. Configure so that the sheeting overlaps adjacent surfaces. Weigh sheets at bottoms as required so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel. Provide a minimum of four feet (4') between the entrance and the exit of any room. Provide a minimum of four feet (4') between doors.
- E. Visual Barrier: Where the Decontamination Area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the Decontamination Area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct a barrier with wood or metal studs covered with minimum ½" thick hardboard or ½" thick plywood. Where the solid barrier is provided, sheeting need not be opaque.
- F. If the Decontamination unit is located within an area containing friable asbestos

on overhead ceilings, ducts, piping, etc., provide the decontamination unit with a minimum ½" plywood "ceiling" with polyethylene sheeting, at least 6 mil in thickness covering the top of the "ceiling".

- G. Alternate methods of providing Decontamination facilities may be submitted to the Owner's Representative for approval. Do not proceed with any such method(s) without written authorization of the Owner's Representative.
- H. Electrical: Provide subpanel at Clean Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel. Connect all electrical branch circuits in Decontamination Unit and particularly any pumps in the shower room to a ground-fault circuit protection device.

3.3 CLEANING OF DECONTAMINATION UNITS:

- A. Clean debris and residue from inside of Decontamination Units on a daily basis or as otherwise indicated on Contract Documents. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.
- B. If the Clean Room of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire Decontamination Unit and erect a new Decontamination Unit. Use the former Clean Room as an inner section of the new Equipment Room.

3.4 SIGNS:

- A. Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

- 1. Provide signs in both English and Spanish.

- 2. Legend:

DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
WEAR RESPIRATORY PROTECTION AND PROTECTIVE
CLOTHING IN THIS AREA

- 3. Provide spacing between respective lines at least equal to the height of the respective upper line.
 - 4. Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sizes and styles of a visibility at least equal to the following, in both English and Spanish:

LEGEND	NOTATION
NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4" Block
ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING THE AREA	3/4" Block
ALL PERSONS SHALL SHOWER IMMEDIATELY AFTER LEAVING WORK AREA AND BEFORE ENTERING THE CHANGE AREA	3/4" Block

END OF SECTION

SECTION 01601

MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Asbestos Contractor's selection of products for use in the project.
- B. The Asbestos Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals".
- C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to products specified.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "systems", "structures", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for use in performing the work or for incorporation in the work, whether purchased for the project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system" and terms of similar intent.
 - 2. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - 3. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the work.
 - 4. "Equipment" are products that may be either operational or fixed.
 - a. Operational equipment are products with operating parts, whether motorized or manually operated, that requires temporary or permanent service connections, such as wiring or piping.

- b. Fixed equipment are products necessary for accomplishing the work that are used as a temporary facility during the work and removed afterward.

1.4 SUBMITTALS

- A. Required submittals: A general listing of products requiring submittals is included at the end of Section 01301 "Submittals". This listing may not be complete. Submittal requirements are found in each specification section. Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.
- B. Product List Schedule:
 - 1. Prepare a schedule showing products specified in a tabular form acceptable to the Environmental Consultant. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
 - 2. Coordinate the product list schedule with the Asbestos Contractor's Construction Schedule and the Schedule of Submittals.
- C. Environmental Consultant's Action: The Environmental Consultant will approve the Asbestos Contractor's product list within 2 weeks of receipt. The Environmental Consultant's response will include a list of unacceptable product selections, containing a brief explanation for this action.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: When the Asbestos Contractor is given the option of selecting between two or more products for use on the project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the site and overcrowding of construction spaces.
 - 2. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

3. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
4. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
5. Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

PART 2 PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
- B. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
- C. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- D. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Asbestos Contractor to use of these products only, the Asbestos Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning “substitutions” to obtain approval for use of an unnamed product.
- E. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
- F. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
 1. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

- G. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

PART 3 EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01701

PROJECT CLOSEOUT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Project record document submittal
 - 2. Final cleaning

1.3 RECORD DOCUMENT SUBMITTALS

- A. Contractor's final report shall include, but not be limited to the following:
 - 1. All daily logs
 - 2. Operational data
 - 3. Summary of all daily OSHA compliance test results
 - 4. Any updated medical reports
 - 5. Proof that employees were notified if exposure levels exceeded current standards
 - 6. Documented proof (receipts) that all asbestos materials have been properly disposed of in a legal, regulated landfill
- B. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Owner's Representative's reference during normal working hours.
- C. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Owner's Representative for the Owner's records.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section “Temporary Facilities”.
- B. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction.
- C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION

SECTION 01711

PROJECT DECONTAMINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS

- A. General: Decontamination of the Work Area following asbestos abatement.
 - 1. If the asbestos abatement work is on damaged or friable materials the work is a three step procedure with two cleanings of the Primary Barrier plastic prior to its removal and one cleaning of the room surfaces to remove any new or existing contamination. Unless specifically indicated otherwise all materials are considered damaged or friable for purposes of this section.
 - 2. Operation of the pressure differential system is used to remove airborne fibers generated by the abatement work.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Removal of Gross Debris is integral with the performance of abatement work and as such is specified in the appropriate work section(s) of these specifications:
 - 1. Section 02081 Removal of Asbestos-Containing Materials
- B. Work Area Clearance: Air testing and other requirements which must be met before release of the Asbestos Contractor and re-occupancy of the work area are specified in Section 01714 Work Area Clearance.

PART 2 PRODUCTS

2.1 GENERAL

- A. Encapsulant shall be Fiberset® PM No. 7470 as manufactured by Fiberlock Technologies, Inc. or approved equal.

PART 3 EXECUTION

3.1 GENERAL

- A. Work of This Section includes the decontamination of air in the Work Area which has been, or may have been, contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to friable asbestos-containing materials in the space.
- B. Work of This Section includes the cleaning, decontamination, and removal of temporary facilities installed prior to abatement work, including:
 - 1. Primary and Critical Barriers erected by work of Section 01526
 - 2. Decontamination Unit erected by work of Section 01563
 - 3. Pressure Differential System installed by work of Section 01513
- C. Work of This Section includes the cleaning and decontamination of all surfaces (ceilings, walls, floors) of the Work Area and all furniture or equipment in the Work Area.

3.2 START OF WORK

- A. Previous Work: During completion of the asbestos abatement work specified in other sections, the secondary barrier of 6 mil polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.
- B. Start of Work: Work of this section begins with the cleaning of the primary barrier. At start of work the following will be in place:
 - 1. Primary Barrier: Two layers of 6 mil polyethylene sheeting on floor and two layers on walls.
 - 2. Critical Barrier: An airtight barrier between the work area and other portions of the building or the outside.
 - 3. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers and other openings.
 - 4. Decontamination Units: For personnel and equipment in operating condition.
 - 5. Pressure Differential System: In operation.

3.3 FIRST CLEANING

- A. First Cleaning: Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum (Note: A HEPA vacuum may fail if used with wet material.). Do

not perform dry dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

- B. Remove all filters in air handling system(s) and dispose of as asbestos- containing waste in accordance with requirements of Section 02084 Disposal of Asbestos-Containing Waste Material.
- C. Wait to allow HEPA filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain pressure differential system in operation for the entire air change period.
- D. After completion of the first cleaning operation of the facility, the Asbestos Contractor shall give written notification to the Asbestos Project Inspector that a pre-encapsulation inspection is needed.
- E. The Asbestos Project Inspector shall perform a visual inspection of the work area to ensure that it is dry and dust free.
- F. After approval by the Asbestos Project Inspector, the Asbestos Contractor shall spray coat all dried exposed surfaces with a sealant. The surfaces to be coated shall include the polyethylene sheeting which has been used to cover walls, floors, and non-removable fixtures and equipment.
- G. Encapsulation of substrate: Perform encapsulation of substrate or installation of spray-applied finishes or fireproofing, where required, at this time. Maintain pressure differential system in operation during encapsulation work. Perform work only after the surfaces have met the requirements for a visual inspection in this section.
- H. After the encapsulation of the polyethylene, the first layer shall be carefully removed and rolled up with the contaminated portion inside. All equipment, machinery, scaffolding, tools, etc. within the isolated work area shall be cleaned with amended water, moved to the equipment room, and properly removed from the work area.

3.4 SECOND CLEANING

- A. Second Cleaning: Carry out a second cleaning of all surfaces in the work area in the same manner as the first cleaning.
- B. Removal of Primary Barriers:
 - 1. Immediately following the second cleaning of the remaining layer of primary plastic, remove all primary barrier sheeting and waste decontamination unit, if there is one, leaving only:
 - a. Critical Barrier: Which forms the sole barrier between the work area and other portions of the building or the outside.

- b. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.
- c. Decontamination Unit: For personnel, in operating condition.
- d. Pressure Differential System: Maintain in continuous operation.

3.5 FINAL CLEANING

- A. Final Cleaning: Carry out a final cleaning of all surfaces in the work area in the same manner as the previous cleanings.
- B. The Asbestos Contractor shall request that a cleanup inspection be performed to insure all visible asbestos has been removed, the area is dust free and that the work area is ready for Clearance Sampling. The Asbestos Project Inspector and the Asbestos Contractor shall perform a complete visual inspection of the entire work area including:
 - 1. Decontamination Unit.
 - 2. Primary seals and critical barriers over HVAC openings, doorways, windows, and other openings.
- C. Look for debris from any source, residue on surfaces, dust or other material. If any such debris, residue, dirt or other material is found, repeat the final cleaning and continue decontamination procedure from that point.
- D. When the area is visually determined to be clean, post removal clearance air sampling shall be performed.
- E. During inspection time allow HEPA filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain pressure differential system in operation for the entire period.

3.6 VISUAL INSPECTION

- A. Temporary lighting: Provide a minimum of 100 foot candles of lighting on all surfaces in the areas to be subjected to visual inspection. Provide hand held lights providing 150 foot candles at 4 feet capable of reaching all locations in work area.
- B. Lifts: Provide ladders, scaffolding, and lifts as required to provide access to all surfaces in the area to be subjected to visual inspection. Access is to allow touching of all surfaces.

3.7 FINAL AIR SAMPLING – PCM OR TEM

- A. Phase Contrast Microscopy (PCM): After the work area is found to be visually clean, PCM air samples will be collected and analyzed in accordance with the procedure for Phase Contrast Microscopy set forth in Section 01714 Work Area Clearance:

1. If release criteria are not met, repeat final cleaning and continue decontamination procedure from that point.
 2. If release criteria are met, proceed to work of this section on removal of work area isolation.
- B. Transmission Electron Microscopy (TEM): After the work area is found to be visually clean, TEM air samples will be collected and analyzed in accordance with the procedure for Transmission Electron Microscopy set forth in Section 01714 Work Area Clearance:
1. If release criteria are not met, repeat final cleaning and continue decontamination procedure from that point.
 2. If release criteria are met, proceed to work of this section on removal of work area isolation.

3.8 ENCAPSULATION

- A. Encapsulation of substrate: Perform encapsulation of substrate or installation of spray-applied finishes or fireproofing, where required, before removal of work area isolation as specified below. Maintain pressure differential system in operation during encapsulation work.
- B. After completion of cleaning all surfaces in the work area and upon receiving a satisfactory pre-sealant inspection, the Asbestos Contractor shall spray coat all dried exposed surfaces with a sealant. The color of this coat shall be separate and distinct from the underlying substrate. The surfaces to be coated shall include surfaces from which asbestos-containing materials have been removed (such as ceilings) and polyethylene which has been used to cover walls, floors and non-removable fixtures and equipment. Where the removal was conducted using the glove bag technique, the area within the glove bag enclosure shall be encapsulated.
- C. Two coats of sealer shall be applied to the substrate after all asbestos-containing material has been removed. Application shall be with an airless spray gun and shall be in strict accordance with the manufacturers' instructions.
- D. With the encapsulation procedure completed, a visual inspection shall be made of the area by the Asbestos Contractor and the Asbestos Project Inspector to check uniformity and coverage.

3.9 REMOVAL OF WORK AREA ISOLATION

- A. After all requirements of this section and Section 01714 Work Area Clearance have been met:
 1. Shut down and remove the pressure differential system. Seal HEPA filtered fan units, HEPA vacuums and similar equipment with 6 mil polyethylene sheet and duct tape to form a tight seal at intake end before

being moved from work area.

2. Remove personnel decontamination unit.
3. Remove the critical barriers separating the work area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection. If significant quantities, as determined by the Owner's Representative, are found then the entire area affected shall be decontaminated as specified in Section 01712 Cleaning & Decontamination Procedures.
4. Remove all equipment, materials, debris from the work site.
5. Dispose of all asbestos-containing waste material as specified in Section 02084 Disposal of Asbestos Containing Waste Material.

3.10 SUBSTANTIAL COMPLETION OF ABATEMENT WORK

- A. Asbestos abatement work is substantially complete upon meeting the requirements of this Section and Section 01714 Work Area Clearance, including submission of:
 1. Certificate of Visual Inspection.
 2. Receipts documenting proper disposal as required by Section 02084 Disposal of Asbestos-Containing Waste Material.
 3. Punch list detailing repairs to be made and incomplete items.

END OF SECTION

SECTION 01714

WORK AREA CLEARANCE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to work of this section.
- B. Visual inspection required as a prerequisite of air testing, is set forth in Section 01711 Project Decontamination.
- C. Air Monitoring performed by the Environmental Consultant during abatement work, is described in Section 01410 Air Monitoring - Test Laboratory Services.

1.2 SUMMARY

- A. This section describes work being performed by the Owner's Environmental Consultant.
- B. This Section sets forth required post-abatement airborne asbestos concentrations in the work area and describes testing procedures the Owner's Environmental Consultant will use to measure these levels.
- C. This Section identifies specific contract requirements relative to re-testing a work area upon Asbestos Contractor's failure of clearance criteria.

1.3 ASBESTOS CONTRACTOR RELEASE CRITERIA

- A. The asbestos abatement work area is cleared when the work area is visually clean and airborne asbestos fiber/structure concentrations have been reduced to the level specified below.
- B. In the event of clearance criteria failure, the Asbestos Contractor shall reimburse the Owner for all expenses incurred by the Environmental Consultant for re-testing the work area.

1.4 VISUAL INSPECTION

- A. Work of this Section will not begin until the visual inspection described in Section 01711 Project Decontamination is complete and has been certified by the API.

1.5 AIR MONITORING

- A. To determine if the elevated airborne asbestos fiber/structure concentration encountered during abatement has been reduced to the specified level, the API will secure samples and analyze them according to the following procedures:

1. Aggressive sampling procedures as described below will be followed.
2. Clearance sampling shall be conducted utilizing Phase Contrast Microscopy (PCM) methodology for exterior and interior non-friable materials and Transmission Electron Microscopy (TEM) methodology for interior materials if required.
3. Upon meeting clearance criteria, the requirements of Section 01711 Project Decontamination can continue.
4. Upon failure of clearance criteria the Asbestos Contractor shall re-clean the work area at no additional expense to the Building Owner.

1.6 AGGRESSIVE SAMPLING

- A. All air samples will be taken using aggressive sampling techniques as follows:
 1. Sampling sites in the abatement area shall be selected on a random basis.
 2. A field blank shall be taken at each abatement areas before sampling is initiated by removing the cap for not more than thirty (30) seconds and replacing it at the time of sampling. A sealed blank shall be carried with each sample set and shall not be opened in the field.
 3. One 10 inch diameter fan per 10,000 cubic feet of work area volume will be mounted in a central location, directed toward ceiling and operated at low speed for the entire period of sample collection.
 4. Air samples will be collected in areas subject to normal air circulation away from room corners and obstructed locations.
 5. Floor, ceilings, and walls shall be swept with the exhaust of a one (1) horsepower (or equivalent) leaf blower.
 6. Pump flow rates shall not exceed ten (10) liters per minute for twenty-five (25) millimeter cassettes.
 7. After air sampling pumps have been shut off, fans will be shut off.
 8. A minimum of 5 clearance samples shall be collected per work area per AHERA.

1.7 SCHEDULE OF AIR SAMPLES

- A. At a minimum, the number of air samples procured within the work area by the Owner's Environmental Consultant shall be in accordance with the Philadelphia Asbestos Control Regulation Chapter6-600 and AHERA.

1.8 CLEARANCE CRITERIA

- A. Each work area shall be considered cleared for removal of critical barriers, decontamination unit(s) and air filtration equipment when the fiber concentration does not exceed the Philadelphia Asbestos Control Regulation Chapter6-600 for a

major project.

- B. **If the first set of clearance samples fail, the Contractor will be financially responsible for subsequent analysis costs and sampling technician costs.**

1.9 ANALYTICAL METHODOLOGY

- A. Phase Contrast Microscopy (PCM) air sampling and analysis shall be conducted in accordance with NIOSH 7400 Methodology.
- B. Phase Contrast Microscopy (PCM) clearance criteria shall be performed by EPA 40 CFR Part 763 Appendix A to Subpart E methodology and compared to the Philadelphia Asbestos Control Regulation Chapter 6-600.
- C. Transmission Electron Microscopy (TEM) clearance criteria shall be performed by EPA 40 CFR Part 763 Appendix A to Subpart E methodology and compared to the Philadelphia Asbestos Control Regulation Chapter 6-600.

1.10 LABORATORY TESTING & SAMPLE ANALYSIS

- A. The services of a testing laboratory will be employed by the Owner's Environmental Consultant to perform laboratory analysis of the procured air samples. Air samples may be analyzed on-site or delivered to a laboratory on a daily basis. Verbal reports of PCM analysis shall be obtained within 24 hours of delivery to the laboratory. If required, verbal reports of TEM analysis shall also be obtained within 24 hours of delivery to the laboratory.
- B. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the Owner, the Owner's Environmental Consultant, and the Asbestos Contractor (if requested).

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 02079

GLOVE BAG REMOVAL

PART 1 GENERAL

1.1 GLOVE BAG TECHNIQUE:

- A. The removal of asbestos by use of glove-bag procedures shall be limited to the removal of asbestos-containing insulation from pipe joints and pipe runs not exceeding 16" in diameter. No glove-bag work shall be permitted on hot pipes exceeding a temperature of 150 degrees Fahrenheit.
- B. The preparation of the Work Area for glove-bag removal shall include the following:
 - 1. A minimum of two (2) persons are required to perform a glove bag removal project. A third person may be required to assist with supplies.
 - 2. Use each glove-bag once. Do not move the glove-bag once it has been mounted.
 - 3. All glove-bag procedures shall be performed utilizing negative air pressure.
 - 4. The Work Area where the technique is to be utilized shall be sealed with critical barriers and posted with warning signs to prevent unauthorized personnel from entering the Work Area.
 - 5. Building occupants shall be removed from any floor where a removal project is in progress unless the work area is completely separated by an airtight physical barrier such as a wall, or by an isolation barrier.
 - 6. The work area shall be separated from the rest of the work site by isolation barriers consisting of solid physical barriers such as ceiling, floors, and walls, or solid partitions, with all openings such as doors, windows, and air vents covered with a single layer of plastic sheeting.
 - 7. At least one (1) layer of plaster sheeting shall be taped to the floor beneath the pipes subject to the abatement extending at least five (5) feet from the area of removal in all directions.
 - 8. The contractor shall pre-clean all surfaces within the room and shall arrange for the shut down and sealing of all electrical, heating, cooling and ventilating air handling systems.
 - 9. Provide a one stage change chamber attached to each glove-bag Work Area. Provide a remote three stage decontamination unit equipped with showering facilities if approved with an Alternative Method Request.
 - 10. All non-moveable items within the Work Area shall be cleaned via wet cleaning methods and shall be HEPA vacuumed when the surfaces have dried.
 - 11. All necessary materials and supplies shall be brought into the Work Area before removal begins.
- C. A visual inspection of the pipe where the work will be performed shall be made to

determine if any damaged pipe covering (broken, hanging, etc.) exists. If there is damage, the pipe shall be wrapped in polyethylene sheeting and fully secured with tape. This procedure will prevent high airborne fiber concentrations from occurring during the glove bag work caused by damaged pipe lagging several feet or even several yards away which may be jarred loose by the activity. Debris on the floor and other surfaces which has accumulated and contains asbestos shall be HEPA vacuumed and wet wiped clean and disposed of as contaminated. If the pipe is undamaged, one layer of tape shall be placed around the pipe at each end where the glove bag will be attached. This creates a good surface to which to seal the ends of the glove bag, and it minimizes the chance of releasing fibers when the tape at the ends of the glove bag is peeled off at the completion of the job.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 EXECUTE STEP BY STEP PROCEDURE AS FOLLOWS:

- A. Slit the top of the glove bag open (if necessary) and cut down the sides to accommodate the size of the pipe (about two inches longer than the pipe diameter).
- B. Place the necessary tools into the pouch located inside the glove bag. This will usually include the bone saw, utility knife, rags, scrub brush, wire cutters, tin snips and pre-cut wettable cloth. Cut out a donut shape in the cloth using the inner diameter of the pipe insulation being removed. Finally, cut a slit in each of the two donuts so they can be slipped around the pipe.
- C. One strip of tape shall be placed along the edge of the open top slit of the glove bag for reinforcement.
- D. Place the glove bag around the section of pipe to be worked on and staple the top together through the reinforcing tape. Staple at intervals of approximately one inch. Next, fold the stapled top flap back and tape it down. This should provide an adequate seal along the top. Next, tape the ends of the glove bag to the pipe itself, previously covered with plastic or duct tape.
- E. The contractor shall smoke test each glove-bag to ensure that it does not leak. The asbestos project inspector shall personally witness the smoke testing of each glove-bag. Using the smoke tube and aspirator bulb, place the tube into the water sleeve (two-inch opening to glove bag). By squeezing the bulb, fill the bag with visible smoke. Remove the smoke tube and twist the water sleeve tightly to close it. Gently squeeze the glove bag and look for smoke leaking out, especially at the top and ends of the glove bag. If leaks are found, they shall be taped closed using duct tape and the bag shall be retested.
- F. Insert the wand from the water sprayer through the water sleeve. Tape the water

sleeve tightly around the wand to prevent leakage.

- G. One person places their hands into the long-sleeved gloves while the second person directs the amended water spray at the work.
- H. If the section of pipe is covered with an aluminum jacket, this is removed first using the wire cutters to cut any bands and the tin snips to remove the aluminum. It is important to fold the sharp edges in to prevent cutting the bag when it is placed in the bottom. A box may be put in the bottom of the bag when the tools are placed in, and the metal placed in the box to further protect the bag from being cut.
- I. With the insulation exposed, using the bone saw, cut the insulation at each end of the section to be removed. A bone saw is a serrated heavy-gauge wire with ring-type handles at each end. Throughout this process, amended water or removal encapsulant is sprayed on the cutting area to keep dust to a minimum.
- J. Once the ends are cut, the section of insulation should be slit from end to end using the utility knife. The cut should be made along the bottom of the pipe and amended water continuously supplied. Again, care should be taken when using the knife not to puncture the bag. Some insulation may have wire to be clipped as well. Again, a box may be used here as in step (H) above to protect the bag from puncture.
- K. Rinse all tools with water inside the bag and place back into pouch.
- L. The insulation can now be lifted off the pipe and gently placed in the bottom of the bag, while the side of the insulation adjacent to the pipe is being thoroughly wetted.
- M. Using the scrub brush, rags and amended water, scrub and wipe down the exposed pipe.
- N. Wet the donut-shaped pieces of wettable cloth over the exposed ends of insulation remaining in the pipe.
- O. Remove the water wand from the water sleeve, insert the encapsulant wand and encapsulate the pipe and the inside of the glove bag.
- P. Remove the encapsulant wand from the water sleeve and attach the small nozzle from the HEPA filtered vacuum only briefly to collapse the bag.
- Q. Remove the vacuum nozzle and twist the water sleeve closed and seal with tape.
- R. From outside the bag, pull the tool pouch away from the bag. Place tape over the twisted portion and then cut the tool bag from the glove bag, cutting through the twisted/taped section. In this manner, the contaminated tools may be placed directly into the next glove bag without cleaning. Alternatively, the tool pouch with the tools can be placed in a bucket of water, opened underwater, and the tools cleaned and

dried without releasing asbestos into the air. This water shall be handled as asbestos-contaminated waste. Rags and the scrub brush cannot be cleaned in this manner and should be discarded with the asbestos waste. No more than one use of a glove-bag shall be permitted.

- S. With removed insulation in the bottom of the bag, twist the bag several times and tape it to keep the material in the bottom during removal of the glove bag from the pipe.
- T. Slip a six (6)-mil disposal bag over the glove bag (still attached to the pipe). Remove the tape and open the top of the glove bag and fold it down into the disposal bag.
- U. All surfaces in the Work Area shall be cleaned using disposable cloths wetted with amended water. These cloths shall be disposed of or rinsed thoroughly to eliminate visible accumulation of debris. Then, when these surfaces have been allowed to dry, all surfaces shall be cleaned again using a HEPA filtered vacuum (See Section 01711).
- V. Place any contaminated articles, debris, etc. into the bag with the waste.
- W. Twist the top of the bag closed, fold this over, and seal with duct tape. Place this bag into a second six (6)-mil disposable bag, and seal as in the above manner. Label the bag with the appropriate warning labels.
- X. Asbestos-containing material shall be disposed of as specified in with Section VI.C.7 of the Philadelphia Asbestos Control Regulation and Section 02084 of this specification.
- Y. Air sampling shall be conducted after completion of glove bag projects to determine if undetected leakage occurred. Once the area has been found to be safe for re-entry by unprotected personnel, the barriers may be removed (See Section 01714).

END OF SECTION

SECTION 02081

REMOVAL OF ASBESTOS CONTAINING MATERIAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Installation of Critical and Primary Barriers, and Work Area Isolation Procedures are set forth in Section 01526 Temporary Enclosures.
- B. Project Decontamination procedures after removal of the Secondary Barrier are specified in Section 01711 Project Decontamination.
- C. Disposal of asbestos-containing waste is specified in Section 02084 Disposal of Asbestos-Containing Waste Material.

1.3 SUBMITTALS:

- A. Before Start of Work: Submit the following to the Owner's Representative for review. Do not start work until these submittals are approved by the Environmental Consultant.
 - 1. Surfactant: Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.
 - 2. Removal Encapsulant: Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.
 - 3. NESHAP Certification: Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet Asbestos-Containing Materials to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M).
 - 4. Safety Data Sheet: Submit the Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant, encapsulating material and solvent proposed for use on the work. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

PART 2 PRODUCTS

- A. Wetting Materials: For wetting prior to disturbance of Asbestos-Containing Materials use either amended water or a removal encapsulant:
 - 1. Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.
 - 2. Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of Asbestos-Containing Material. Use a material which results in wetting of the Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a mixture of 50% polyoxyethylene ester and 50% polyoxyethylene ether in five gallons of water.
- B. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mil thick as indicated, frosted or black as indicated.
- C. Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.
- D. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
- E. Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled as required by Section 02084 Disposal of Asbestos Containing Waste Material.
- F. Fiberboard Drums: Provide heavy duty leak tight fiberboard drums with tight sealing locking metal tops.
- G. Paper board Boxes: Provide heavy duty corrugated paper board boxes coated with plastic or wax to retard deterioration from moisture. Provide in sizes that will easily fit in disposal bags.

PART 3 EXECUTION

3.1 WORKER PROTECTION:

- A. Before beginning work with any material for which a Safety Data Sheet has been

submitted provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

3.2 GENERAL PROCEDURES FOR THE REMOVAL OF ASBESTOS-CONTAINING MATERIALS:

- A. Thoroughly wet asbestos-containing materials to be removed prior to stripping and/or demolition to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for amended water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions.
- B. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.
- C. Asbestos-containing fitting insulation and pipe insulation 2-6" is to be removed using containment bag removal techniques.
- D. Asbestos containing Floor Tile VAT 12"x12" Brown and Mastic shall be removed under limited containment utilizing critical barriers. Floor tiles must be removed non-friably in an intact manner utilizing heat machines or dry ice. If floor tiles are to be removed utilizing dry ice, proper ventilation shall be supplied by contractor. ACM Mastic is to be removed utilizing a no-odor solvent designed for flooring mastic removal. ACM Mastic contaminated floor tiles shall be disposed of as ACM waste. Unbroken tiles may be placed into clear 6-mil polyethylene bags and then placed into sealed leakproof drums.
- E. Sinks with ACM Sink Undercoat shall be removed intact and placed whole into clear labeled 6-mil polyethylene bags.
- F. Chalkboard/Tackboard Glue Dots shall be removed in a non-friable manner utilizing heat and/or solvent to soften and the manually removed using hand tools. No grinding, chipping, or abrading is permitted. Chalkboards and tackboards with residual glue dots shall be disposed of as non-friable ACM contaminated waste.
- G. Removal of the asbestos material shall be done in small sections by two-person teams, on staging platforms if needed. The wet material from each section shall be packed and sealed into clear labeled 6-mil polyethylene bags. When possible, one worker shall remove and hand sections of asbestos material to the other worker who shall then place the material into labeled 6-mil polyethylene bags.
- H. Asbestos-containing and asbestos-contaminated materials shall be containerized at that height for eventual disposal. Asbestos-containing materials shall be handled

carefully. No asbestos is permitted to drop directly to the ground. Any unnecessary agitation of the material is strictly prohibited.

- I. All asbestos-containing and asbestos-contaminated materials described in the scope of work shall be removed. The Contractor shall take care that all asbestos has been removed from fasteners, from channels of support systems, construction blocks, ductwork and piping, and all other hard to reach places.
- J. As a method of organizing the asbestos removal work, workers shall begin working on the areas nearest to the decontamination unit and work towards the negative air filtration units.
- K. Operations shall be continuous so that once an area is started it shall be worked on to the first wet wipe. The wet material from each section shall be packed and sealed into labeled 6-mil polyethylene bags and double bagged with visible labels prior to starting the next section. Water-soaked fallen material shall be picked up while wet to prevent water loss due to evaporation.
- L. Maintain good housekeeping so as not to accumulate loose asbestos.
- M. Reach the clean wipe state as quickly as possible.
- N. Remove the residues as quickly as possible so as not to walk or track through it, thus grinding it to smaller, more potentially dangerous sizes.
- O. Place the asbestos into clear 6-mil polyethylene bags as quickly as possible so as not to allow asbestos to dry out and become airborne. Bags shall be handed down or chuted down carefully from one worker to another. All bags shall be placed into a second clear labeled 6-mil polyethylene bag for disposal.
- P. Contaminated material containing sharp edged items shall be cut to size while adequately wet, placed in small cardboard boxes or burlap bags and double bagged, or double bagged and then placed in temporary fiber drums, the integrity of which is the Contractor's responsibility.
- Q. Bags shall be marked with the labels prescribed by 40 CFR Part 61 Section 61.150 of the EPA regulations. The outside of all containers shall be wet cleaned or HEPA vacuumed before leaving the work area.
- R. After removal, the underlying material shall be brushed with a stiff, nylon bristle brush. Wire brushes are not permitted; asbestos fiber bundles break into smaller more hazardous fiber sizes when a wire brush is utilized. After the material is brushed, it shall be wet wiped with amended water. Only 100% removal will be accepted.

END OF SECTION

SECTION 02084

DISPOSAL OF ASBESTOS-CONTAINING WASTE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.
- B. Section 01092 Codes and Regulations - Asbestos Abatement describes applicable federal, state and local regulations.

1.2 DESCRIPTION OF THE WORK

- A. This section describes the disposal of Asbestos-Containing Materials. Disposal includes packaging of asbestos-containing waste materials.

1.3 SUBMITTALS

- A. Before Start of Work: Submit the following to the Owner's Representative for review. Do not commence work until these submittals are approved by the Environmental Consultant.
 - 1. Copy of state or local license for waste hauler.
 - 2. Name and address of landfill where asbestos-containing waste materials are to be buried. Include contact person and telephone number.
 - 3. For operations that convert asbestos containing waste material into non-asbestos (asbestos-free) material, product data on process to be used.
 - 4. Letters or other documents from the United States Environmental Protection Agency (USEPA) relative to the process:
 - a. Indicating that the process to be used can produce an asbestos-free product and is capable of satisfying the requirement for an acceptable "alternative" means of complying with Section 61.150(a) of the NESHAP regulation for asbestos.
 - b. Identifying process parameters or operating conditions important to the successful operation of the process.
 - 5. Chain of Custody form and form of waste manifest proposed.
 - 6. Sample of disposal bag and any added labels to be used.
- B. On a weekly basis submit copies of all manifests and disposal site receipts to Owner's Environmental Consultant.

PART 2 PRODUCTS

2.1 DISPOSAL BAGS & LABELS

- A. The Contractor shall provide 6 mil thick leak-tight polyethylene clear bags labeled with four (4) labels with text as follows:

- B. First Label:

CAUTION: CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

- C. Second Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication Standard:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

- D. Third Label: Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised February 17, 1987:

RQ HAZARDOUS
SUBSTANCE
SOLID, NOS,
ORM-E, NA 9188
(ASBESTOS)

- E. Fourth Label: Provide in accordance with 40 CFR Part 61 Asbestos NESHAP revision; Final Rule dated November 20, 1990.

PHILADELPHIA PUBLIC SCHOOL DISTRICT
6600 CHESTER AVENUE
PHILADELPHIA, PENNSYLVANIA 19142

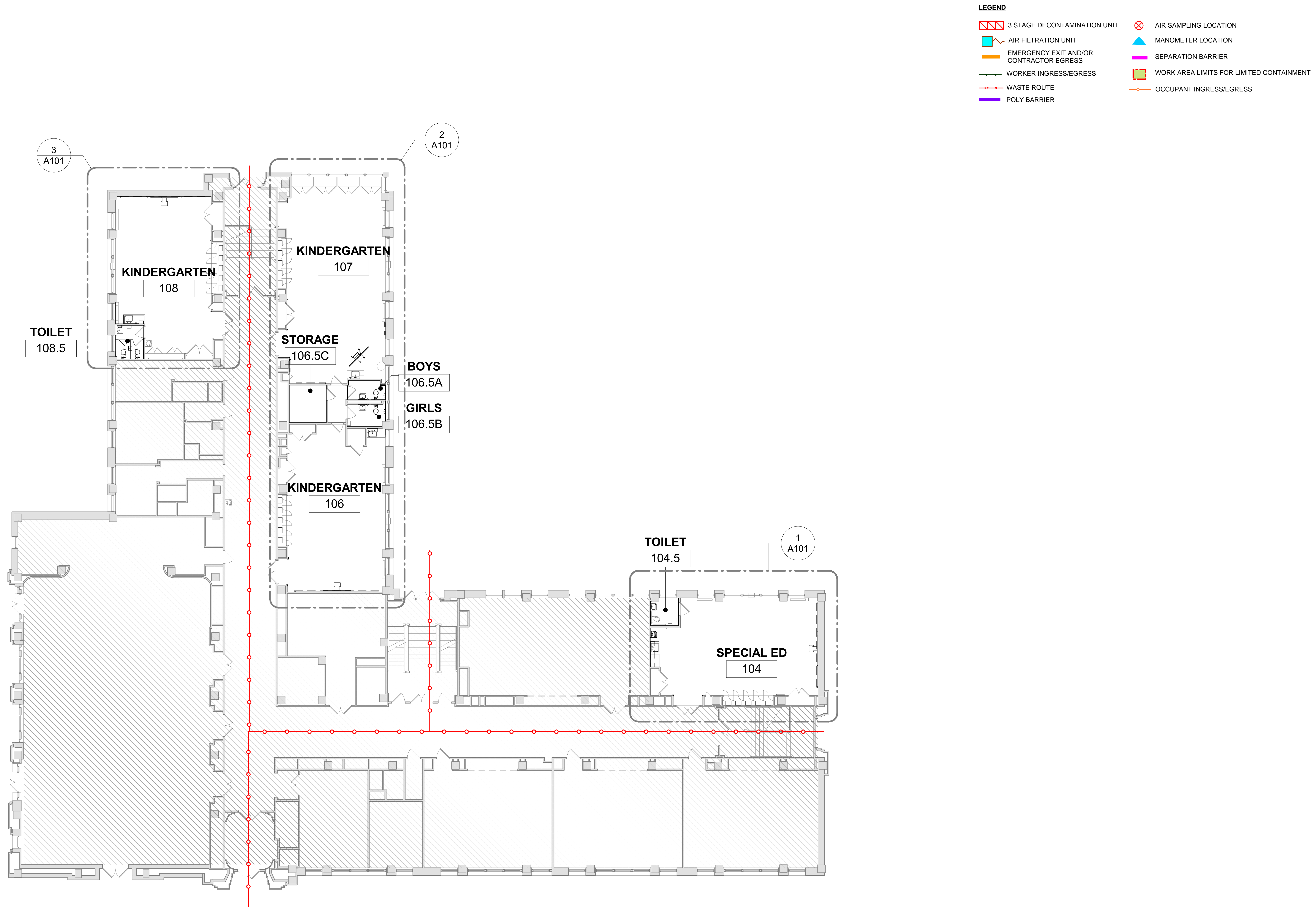
PART 3 EXECUTION

3.1 GENERAL

- A. Comply with the following sections during all phases of this work:
1. Section 01560 Worker Protection - Asbestos Abatement.

2. Section 01562 Respiratory Protection.
- B. All waste is to be hauled by a waste hauler with all required licenses from all state and local authorities with jurisdiction.
- C. Load all asbestos-containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one of the following:
 1. Two 6 mil thick clear waste disposal bags.
 2. Two 6 mil thick clear waste disposal bags and a fiberboard drum.
- D. Protect interior walls and floor of truck or dumpster with one layer of 6 mil polyethylene sheeting.
- E. Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.
- F. Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.
- G. Do not transport asbestos-containing materials in open trucks or dumpsters. Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as asbestos-containing waste and dispose of in accordance with this specification.
- H. Advise the landfill operator or processor, at least ten days in advance of transport, of the quantity of material to be delivered.
- I. At disposal site, unload containerized waste:
 1. At a disposal site, sealed plastic bags may be carefully unloaded from the truck. If bags are broken or damaged, return the bags to the work site for re-bagging. Clean entire truck and contents using procedures set forth in section 01711 Project Decontamination.
 2. At a waste processing site the truck and loading dock are arranged as a controlled Work Area and containerized waste is transferred to the storage area by site personnel. All bags including broken ones will be transferred. Clean the truck, using procedures set forth in section 01711 Project Decontamination.
- J. Retain receipts from landfill or processor for materials disposed of.
- K. At completion of hauling and disposal of each load, submit a copy of the waste manifest, chain of custody form, and landfill receipt to Environmental Consultant.

END OF SECTION



PENNONI ASSOCIATES INC.
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CLASSROOM MODERNIZATION ABATEMENT
EGRESS PLAN -FIRST FLOOR

PROJECT **SDPLD21006**

DATE **2/1/2022**

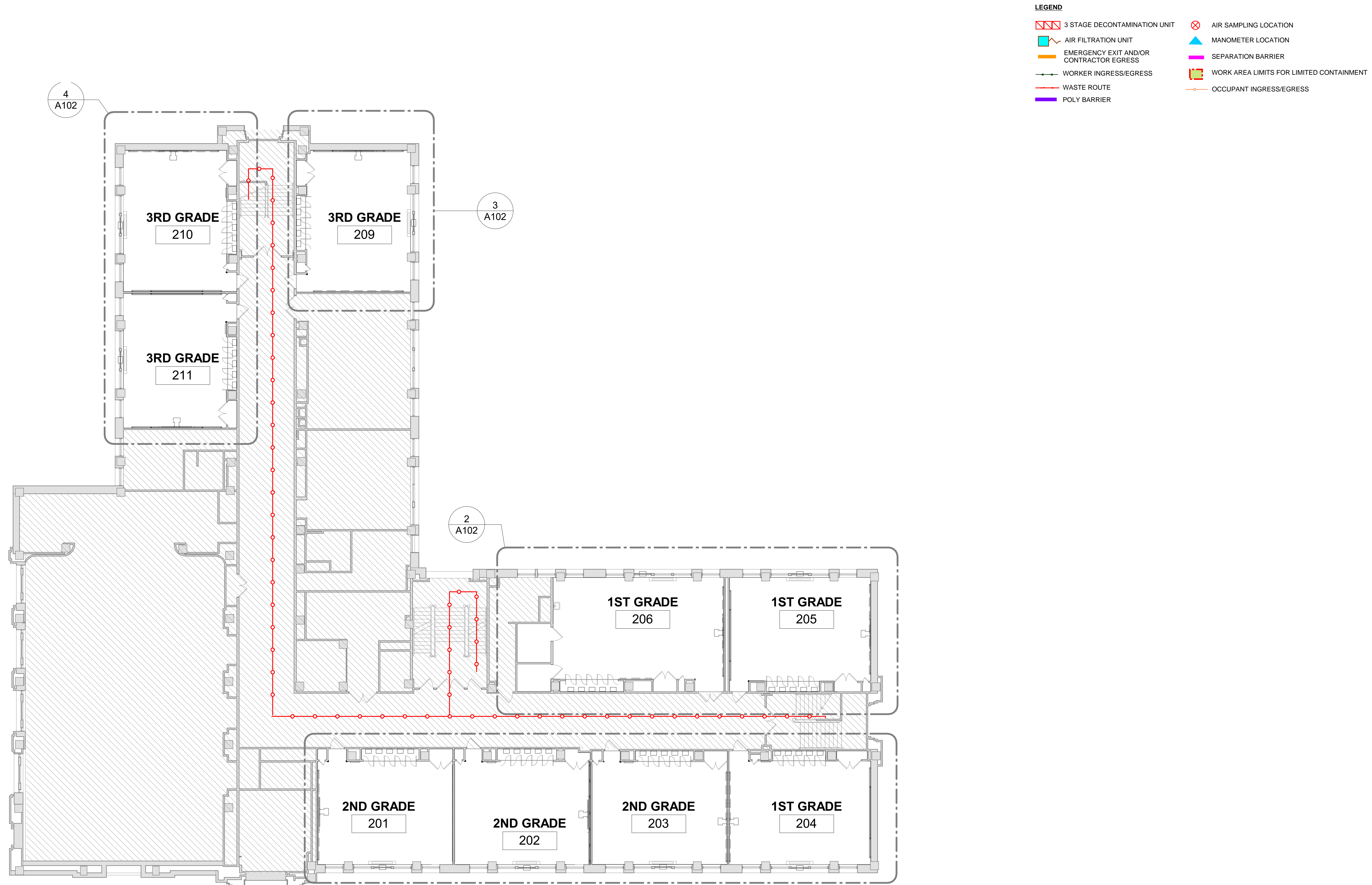
DRAWING SCALE **NTS**

DRAWN BY **JTH**

APPROVED BY

EGRESS-1

SHEET 1 OF 2



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CLASSROOM MODERNIZATION ABATEMENT
EGRESS PLAN -SECOND FLOOR

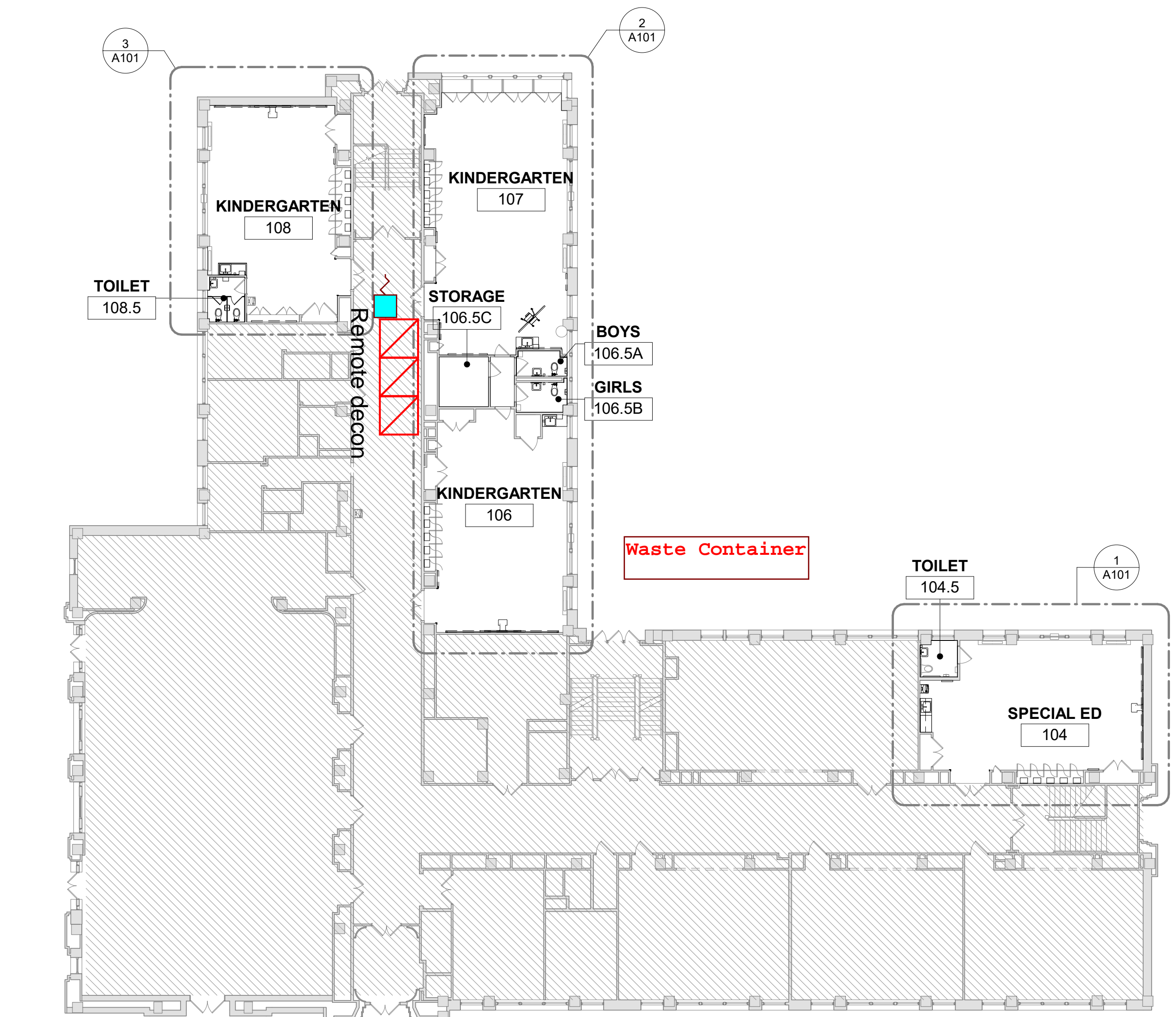
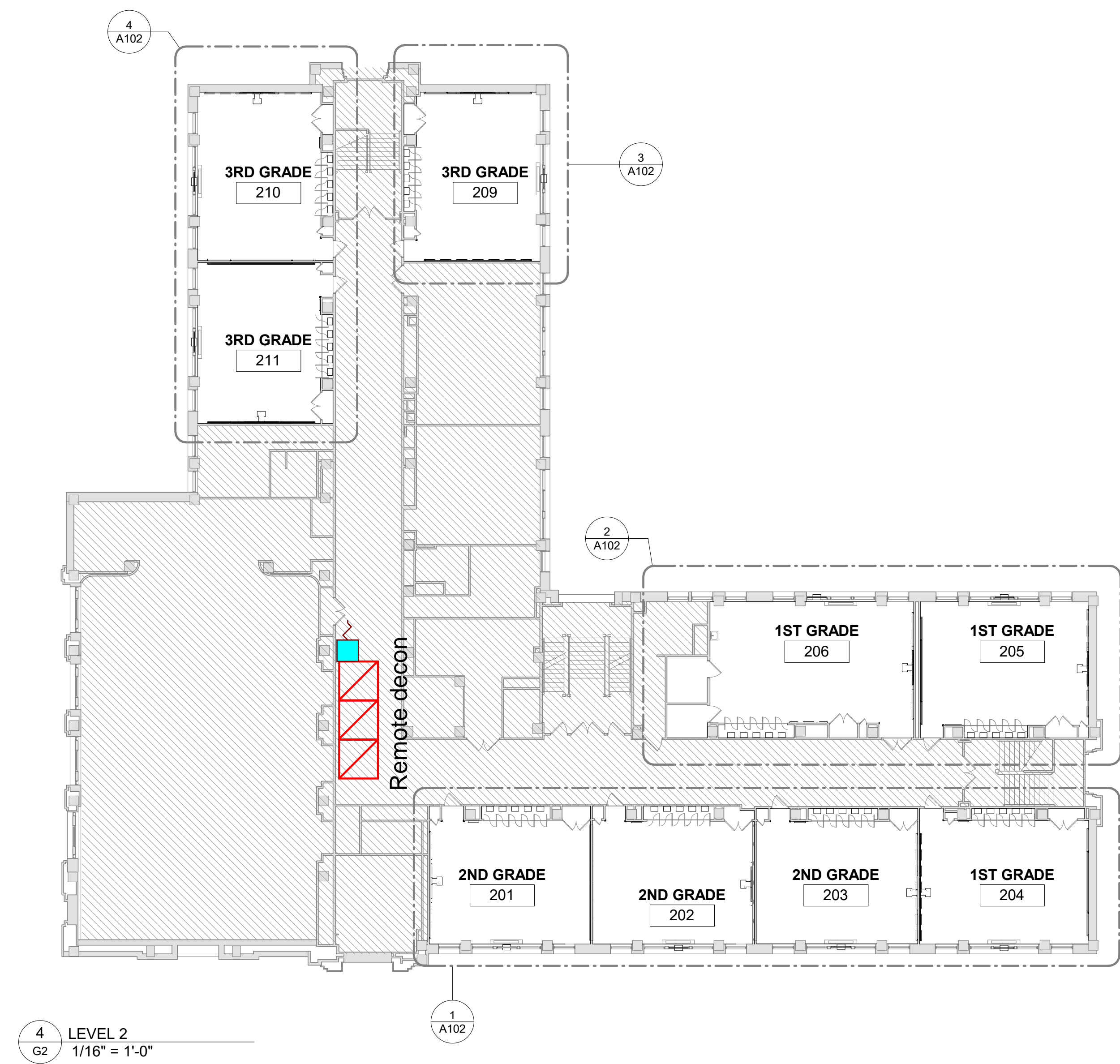
PROJECT	SDPLD21006
DATE	2/1/2022
DRAWING SCALE	NTS
DRAWN BY	JTH
APPROVED BY	
EGRESS-2	
SHEET 2 OF 2	




LEGEND

	3 STAGE DECONTAMINATION UNIT		AIR SAMPLING LOCATION
	AIR FILTRATION UNIT		MANOMETER LOCATION
	EMERGENCY EXIT AND/OR CONTRACTOR EGRESS		SEPARATION BARRIER
	WORKER INGRESS/EGRESS		WORK AREA LIMITS FOR LIMITED CONTAINMENT
	WASTE ROUTE		ONE STAGE CHANGE ROOM
	POLY BARRIER		

 PENNONI ASSOCIATES INC. 515 Grove Street, Suite 1B Haddon Heights, NJ 08035 T 856.547.0505 F 856.547.9174	PROJECT	SDPLD21006
	DATE	2/1/2022
	DRAWING SCALE	NTS
	DRAWN BY	JTH
	APPROVED BY	ASB-2
JOSEPH CATHARINE ELEMENTARY SCHOOL UCLS 1250 6600 CHESTER AVE. PHILADELPHIA, PENNSYLVANIA 19042 CLASSROOM MODERNIZATION ABATEMENT ABATEMENT PLAN -SECOND FLOOR		SHEET 2 OF 3





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CLASSROOM MODERNIZATION ABATEMENT
ABATEMENT PLAN -DECON & WASTE
LOCATIONS

PROJECT	SDPLD21006
DATE	2/1/2022
DRAWING SCALE	NTS
DRAWN BY	JTH
APPROVED BY	
ASB-3	
SHEET 3 OF 3	



February 2, 2022

SDPLD21006

School District of Philadelphia
Attn: Mr. F. Gaeton Tavella
Office of Environmental Management and Services
Environmental Compliance Manager
440 North Broad Street
Philadelphia, Pennsylvania 19130

**RE: ASBESTOS AND LEAD-BASED PAINT INSPECTION
CLASSROOM MODERNIZATIONS PROJECT
CATHARINE ELEMENTARY SCHOOL (ULCS#1250)
6600 CHESTER AVENUE
PHILADELPHIA, PENNSYLVANIA 19142**

Dear Mr. Tavella:

Pennoni is providing this report to the **School District of Philadelphia** documenting the asbestos and lead-based paint inspection conducted at the above referenced location. Activities completed as part of the investigation included a survey of the proposed renovation areas for asbestos-containing materials (ACM) and lead-based paint (LBP) as defined in renovation drawings dated 10/9/21. The following information details the results of our efforts.

BACKGROUND

Pennoni reviewed renovation plans and historical data for the school prior to the start of the project to determine if known ACM may be present and potentially disturbed by the planned project.

ASBESTOS SURVEY

Pennoni performed an asbestos survey on January 20, 2022, to identify accessible ACM within the proposed renovation areas. The asbestos survey was conducted by a team of Pennoni's City of Philadelphia Asbestos Investigators and United States Environmental Protection Agency (USEPA) certified Asbestos Building Inspectors (see Appendix A – Inspector Credentials).

During the inspection, 19 samples of 17 identified suspect ACM were collected (see Appendix B – Asbestos Field Inspection Forms, Appendix C – Site Photographs, Appendix D – Sample Location Drawings). The following suspect and presumed ACMs, listed here by homogeneous identification number, were identified during the survey:

- | | |
|--|---|
| 1. Sheetrock Wall (NAD) | 8. 12"x12" Brown Floor Tile and Mastic (NAD/ POS) |
| 2. Joint Compound Wall (NAD) | 9. Pipe Fitting Insulation (POS *) |
| 3. Covebase Mastic (NAD) | 10. Pipe Insulation, 2-6 inch (POS *) |
| 4. Ceramic Tile Wet Bed (NAD) | 11. Blackboard/Tackboard Glue Dots (PACM) |
| 5. Linoleum, Faux Wood (NAD) | 12. Plaster Ceiling (NAD**) |
| 6. Wall Paint (NAD) | 13. Plaster Walls (NAD**) |
| 7. 12"x12" Tan Floor Tile and Mastic (NAD/NAD) | 14. Floor Tile VAT 9"x9" Brown (POS *) |
| | 15. CMU Block Wall Paint White (NAD**) |

16. Ductwork Paint White (NAD**)

17. Sink Undercoat Mastic White (POS*)

*(NAD) – No Asbestos Detected; (POS) – Positive for Asbestos Content; (PACM) – Not Sampled/Presumed ACM
*Previously Identified ACM; **Previously Identified Non-ACM*

The samples were properly packaged, labeled and transported to EMSL Analytical, Inc. (EMSL), located in Cinnaminson, New Jersey. EMSL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP). The samples were analyzed for asbestos content utilizing Polarized Light Microscopy (PLM) via EPA Method 600/R-93/116.

Analytical results indicate one of the sampled materials contain greater than 1% asbestos. One material (i.e., blackboard/tackboard glue dots) was not sampled and therefore presumed to contain asbestos. Four materials (i.e., pipe fitting insulation, pipe insulation 2–6-inch, floor tile VAT 9"x9" brown and sink undercoat mastic white) identified in the planned renovation areas were previously confirmed to be asbestos containing. Results are summarized in the attached Excel table in Appendix B with full analytical certificates included in Appendix E.

LEAD-BASED PAINT SCREENING

On January 20, 2022, Mr. Jeremy Humble, one of Pennoni's United States Environmental Protection Agency (USEPA) trained and Commonwealth of Pennsylvania licensed Risk Assessors (see Appendix A – Inspector Credentials) conducted a screening of the planned renovation areas to determine if LBP is present on any of the existing painted surfaces or building components. The inspection and testing were generally performed following the United States Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing – July 2012 and the City of Philadelphia Department of Health (DOH). Our inspection included interior surfaces associated with the planned renovation areas, however, should not be considered a full HUD Lead Paint Inspection.

The testing was performed on-site utilizing a Niton® XLp300A portable x-ray fluorescence lead-in-paint analyzer (XRF). Homogeneous painted surfaces were scanned with the handheld XRF which yielded readings of lead content of tested paint.

The XRF results are based on the Performance Characteristic Sheets (PCS) and were obtained in the K&L Mode. This mode takes reading results and errors for both K and L-shell readings and corrects for various substrates. The "Lead Detected in the mg/cm² total" field is represented as a corrected value of the analyzer which represents the component as to being positive or negative. This is the result reported on the data sheets. Please refer to Appendix F for the instrument performance characteristic sheet.

HUD and the USEPA defines lead-based paint as a painted surface containing greater than or equal to one milligram of lead per square centimeter (1.0 mg/cm²) as measured by a hand-held XRF lead-in-paint analyzer or greater than 0.5% by weight as measured by laboratory analysis of collected paint chip samples. The City of Philadelphia DOH defines lead-based paint as a painted surface containing greater than or equal to 0.7 milligram of lead per square centimeter (0.7 mg/cm²) as measured by a hand-held XRF lead-in-paint analyzer (see components designated as red in Appendix G).

OSHA regulation 24 CFR 1926.62 OSHA Lead in Construction Standard has established a threshold of any level of lead above the detection level is defined as lead containing (i.e., greater than 0.0 ug/cm²). XRF readings between 0.1 ug/cm² and 0.6 ug/cm² has been identified as OSHA positive (see components designated as blue in Appendix G).

Thirteen surfaces were tested throughout the renovation areas, of which the following component systems exceeded the City of Philadelphia threshold for LBP (see Appendix G – Lead-Based Paint Data):

Table 1 – Lead-Based Paint Building Components Catharine Elementary School – Classroom Modernizations Project 6600 Chester Avenue Philadelphia, Pennsylvania 19142		
Location	Component	Substrate Material
1 st Floor, Room 106	Wall (orange)	Plaster
	Walls (off-white)	Plaster and Drywall
	Wall (white)	Plaster
1 st Floor, Girls Room at Room 106	Walls (off-white)	Plaster and Drywall
	Door Frame (off-white)	Metal
1 st Floor, Room 107	Wall (off-white)	Plaster
2 nd Floor, Room 203	Walls (off-white and yellow)	Plaster
2 nd Floor, Room 210	Wall (off-white)	Plaster

The identified LBP was found to be in an intact condition. Paint of similar components should also be considered LBP if found in other parts of the building or were inaccessible. Removal of existing LBP is not required prior to renovation/demolition activities; however, the contractor performing renovation/demolition activities should be notified that LBP is present. Contractors should be instructed to follow applicable Occupational Safety & Health Administration (OSHA) and USEPA regulations regarding working with LBP.

LIMITATIONS

The goal of the asbestos and lead-based paint survey was to identify readily accessible suspect building materials in preparation for planned renovation activities. Pennoni's survey did not include areas outside the project scope of work as well as operational utility systems, below-grade or subfloor sampling, concealed pipe chase spaces, or inaccessible crawlspaces associated with foundations. Hazardous materials may be present in these areas. Quantities in this report are estimated and should be verified for bidding purposes. Pennoni should be contacted immediately if renovation activities uncover materials that are not identified in this report.

SUMMARY

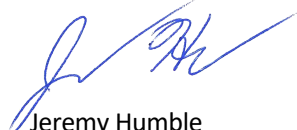
In summary, Pennoni conducted an asbestos and lead-based paint survey at the Catharine Elementary School. Asbestos-containing materials were determined to be present in the renovation areas scheduled for renovation and must be removed prior to renovation activities by a licensed abatement contractor.

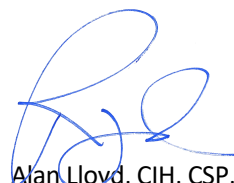
A City of Philadelphia Asbestos Inspection Report (AIR) is included in Appendix H.

If you have any questions concerning this report or require additional information, please feel free to contact us at 856-547-0505.

Sincerely,

PENNONI ASSOCIATES INC.


Jeremy Humble
Project Manager


Alan Lloyd, CIH, CSP, ENV SP
Vice President, EHS Practice Leader

Attachments

- Appendix A – Inspector Credentials
- Appendix B – Asbestos Field Inspection Forms
- Appendix C – Site Photographs
- Appendix D – Sample Location Drawings
- Appendix E – Asbestos Laboratory Analytical Certificates
- Appendix F – Niton® XLp300 Performance Characteristic Sheet
- Appendix G – Lead-Based Paint Data
- Appendix H – City of Philadelphia Asbestos Inspection Report (AIR)

U:\Accounts\SDPLD\SDPLD21006 - Catherine Annex Head Start ACM\DOC PREP\Elementary\SDPLD21006 Catherine ACM and LBP.docx

APPENDIX A

Inspector Credentials

Asbestos Investigator
Certified by AMS



Jeremy Humble

Certificate #: AIC18-000023
Issue Date: 04/09/2021
Expiration: 03/31/2022



City of Philadelphia
Dept. of Public Health
Air Management
Services



Inspector in good standing. Pending receipt of physical cards.
Refresher expiring in Dec 2022 attached.

Certificate of Completion

awarded to

Jeremy Humble

for successfully completing the prescribed course of study in

New Jersey Lead Inspector/Risk Assessor Refresher Housing and Public Buildings

in accordance with EPA, HUD, and NJDH Guidelines

presented by

ACCESS TRAINING SERVICES, INC.
7921 River Road, Pennsauken, New Jersey 08110
(856) 665-3449

12/15/20

Course Date

12/15/20

Exam Date

12/15/22

Expiration Date

Not Provided

Social Security Number

ACC-1220-18-005

Certificate Number


Mark K. Schlager
Training Director

Certificate of Completion

awarded to

Matthew Thomas

for successfully completing the prescribed course of study in

**Pennsylvania Asbestos
Building Inspector Initial Course**
under TSCA Title II

presented by

ACCESS TRAINING SERVICES, INC.
7921 River Road, Pennsauken, NJ 08110
(856) 665-3449

11/1-3/21

Course Date

11/3/21

Exam Date

11/3/22


Expiration Date

Not Provided

Social Security Number

ACC-1121-5-001

Certificate Number



Mark K. Schlager
Training Director

APPENDIX B

Asbestos Field Inspection Forms

HOMOGENOUS MATERIALS LIST

Project Number: <u>SDPLD 21006</u>	Page <u>1</u> of <u>1</u>
Site: <u>Catharine Elementary</u>	Inspector: <u>J. Humble</u>
Building:	Reviewed By: <u>M. Thomas</u>
Floor:	Date: <u>1/20/22</u>

HID #	Material	Sample Number(s)	Photo
01	Sheetrock Wall	A, B	
02	Joint Compound Wall	A, B	
03	Cove Base Mastic	A B	
04	Ceramic Tile Wet Bed	A, B	
05	Linoleum - Faux Wood	A, B	
06	Pa Paint - Wall	A, B	
07/M	12"x12" Tan Floor Tile & Mastic	A, MA, B, MB	
08/M	12"x12" Brown Floor Tile & Mastic	A, MA, B, MB	
09	Pipe Fitting Insulation	P ACM	
10	Pipe Insulation 2-6 inch	P ACM	
11	Blackboard/Tackboard Glue Dots	PACM	
12	Plaster Ceiling	P NAD	
13	Plaster Walls	NAD	
14	Floor Tile VAT 9"x9" Brown	ACM	
15	CMU Block Wall Paint White	NAD	
16	Duct Work Paint White	NAD	
17	Seal Undercoat Mastic White	ACM	

APPENDIX C

Site Photographs



Photograph 1: HID 01. Sheetrock Wall (NAD) and HID 02. Joint Compound Wall (NAD)



Photograph 2: HID 03. Covebase Mastic (non-ACM)



Photograph 3: HID 04. Ceramic Tile Wet Bed (NAD)



Photograph 4: HID 05. Linoleum, Faux Wood (NAD)



Pennoni Associates, Inc.
515 Grove Street, Suite 1B
Haddon Heights, New Jersey 08035

Job No. SDPLD21006

Date Taken: JANUARY 20, 2022

ASBESTOS INSPECTION
CATHARINE ELEMENTARY SCHOOL
6600 CHESTER AVENUE
PHILADELPHIA, PENNSYLVANIA 19142

SITE PHOTOGRAPHS



Photograph 5: HID 06. Wall Paint (NAD), HID 12. Plaster Ceiling (Previously Confirmed No Asbestos Detected) and HID 13. Plaster Walls (Previously Confirmed No Asbestos Detected)



Photograph 6: HID 9. Pipe Fitting Insulation (**Previously Confirmed ACM**) and HID 10. Pipe Insulation 2-6 Inch (**Previously Confirmed ACM**)



Photograph 7: HID 7. 12"x12" Tan Floor Tile and Mastic (NAD/NAD) and HID 14. Floor Tile VAT 9"x9" Brown (**Previously Confirmed ACM**)



Pennoni Associates, Inc.
515 Grove Street, Suite 1B
Haddon Heights, New Jersey 08035

Job No. SDPLD21006

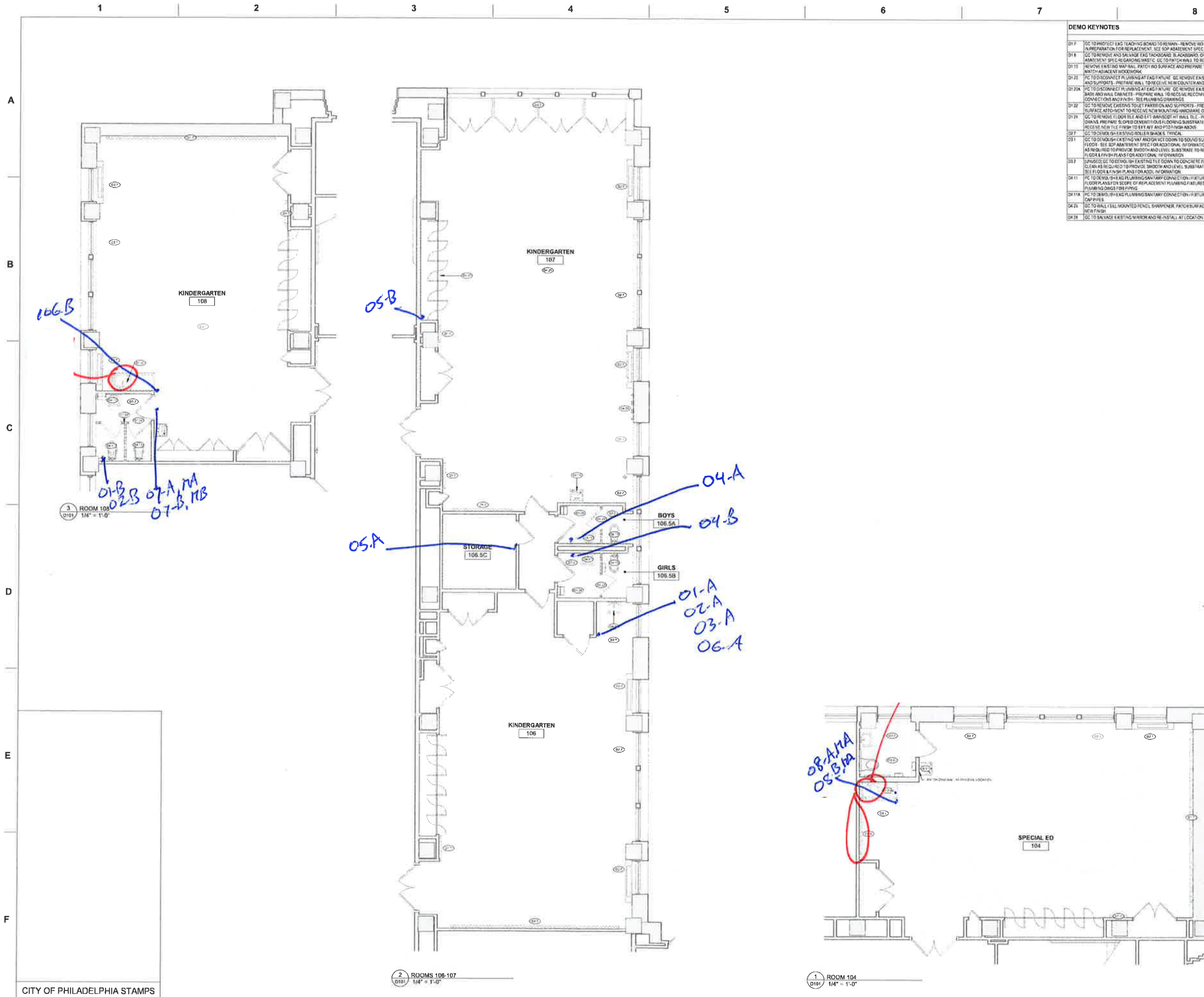
Date Taken: JANUARY 20, 2022

ASBESTOS INSPECTION
CATHARINE ELEMENTARY SCHOOL
6600 CHESTER AVENUE
PHILADELPHIA, PENNSYLVANIA 19142

SITE PHOTOGRAPHS

APPENDIX D

Sample Location Drawings



DEMO KEYNOTES	
D17	GC TO PROTECT EXISTING TEACHING BOARD TO REMAIN - REMOVE WOOD STOPS AND TACK SURFACES IN PREPARATION FOR REPLACEMENT. SEE S&P ASBESTOS SPEC REGARDING MASTIC.
D18	GC TO REMOVE AND SALVAGE EXISTING TACKBOARD BACKINGS ON WAINSCOTING - SEE S&P ASBESTOS SPEC REGARDING MASTIC. GC TO PATCH WALL TO RECEIVE NEW FINISH.
D19	REMOVE EXISTING WALL PATCH NO SURFACE AND PREPARE TO RECEIVE NEW FINISH TO MATCH ADJACENT WOODWORK.
D20	PC TO DISCONNECT PLUMBING AT EXISTING SINK, COUNTERTOP, AND SUPPORTS. PREPARE WALL TO RECEIVE NEW COUNTERTOP AND FINISH.
D20A	PC TO DISCONNECT PLUMBING AT EXISTING SINK, COUNTERTOP, BASE AND WALL CABBINETS. PREPARE WALL TO RECEIVE RECONFIGURED PLUMBING CONNECTIONS AND FINISH. SEE PLUMBING DRAWINGS.
D21	GC TO REMOVE EXISTING TOILET PARTITION AND SUPPORTS. PREPARE FLOOR AND WALL SURFACE ATTACHED TO RECEIVING NEW INSULATING WAINSCOTING OR FINISH.
D22	GC TO REMOVE FLOOR TILE AND LEFT HAND SIDE HT WALL TILE. PROTECT EXISTING FLOOR DRAIN. PREPARE SLOPED CONCRETE FLOORING SUBSTRATE AND WALL SURFACE TO RECEIVE NEW TILE FINISH TO EFT AND RIGHT HAND SIDE.
D23	GC TO DISMANTLE EXISTING ROLLER SHADES. TYPICAL.
D24	GC TO DISMANTLE EXISTING WAX AND GROUT DOWN TO SOUND SUBSTRATE OR CONCRETE FLOOR. SEE S&P ASBESTOS SPEC FOR ADDITIONAL INFORMATION. PATCH AND CLEAN AS REQUIRED TO PROVIDE SMOOTH AND LEVEL SUBSTRATE TO RECEIVE NEW FINISH. SEE FLOOR FINISH PLAN FOR ADDITIONAL INFORMATION.
D25	UNUSABLE GC TO DEMOLISH EXISTING TILE DOWN TO CONCRETE FLOOR. PATCH AND CLEAN AS REQUIRED TO PROVIDE SMOOTH AND LEVEL SUBSTRATE TO RECEIVE NEW FINISH. SEE FLOOR FINISH PLAN FOR ADDITIONAL INFORMATION.
D26	PC TO DEMOLISH EXISTING PLUMBING SANITARY CONNECTION FUTURE. PATCH AND REPAIR SEE FLOOR PLAN FOR SCOPE OF REPLACEMENT PLUMBING FIXTURES IN SAME LOCATION. PLUMBING DINGS FOR PIPING.
D27	PC TO DEMOLISH EXISTING PLUMBING SANITARY CONNECTION FUTURE. PATCH AND REPAIR WALL CAPPIERS.
D28	GC TO WALL MOUNTED FENCE SWAPPER. PATCH SURFACE AND PREPARE TO RECEIVE NEW FINISH.
D29	GC TO SALVAGE EXISTING MIRROR AND RE-INSTALL AT LOCATION INDICATED.

THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF CAPITAL PROGRAMS
440 NORTH BROAD STREET
PHILADELPHIA, PA 19130 - 4015
(215) 400 - 4730 | (215) 400 - 4731 (fax)
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SEAL:

ARCHITECT
O.J. Collaborative
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Philadelphia, PA 19143
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Email: o.j.collaborative@njccapital.com
Arlene Moore, Architect, AIA
www.ojcollaborative.com

MEP ENGINEER
Gannett Fleming, Inc.
881 Market Street, Suite 2600
Philadelphia, PA 19103
Phone: (215) 557-0104
Email: bweiler@gfnet.com
Arlene Moore, Engineer, PE
www.gannettflaming.com

Design Development
October 9, 2021

DATE REVISION
SCHOOL & LOCATION
Calhoun Elementary & Annex
4600 Chester Ave & 4900
Greenway Ave

PROJECT TITLE
Classroom Modernizations

DRAWING TITLE
DEMO FLOOR PLANS - LEVEL 1

DRAWING SCALE 1/4" = 1'-0"	FILE NO. Project Number
LOCATION NO. 5530	DRAWN BY Author
DRAWN BY Author	CHECKED BY Checker
GC B-XXXX MC B-XXXX PC B-XXXX EC B-XXXX	OF 2020 / 21 OF 2020 / 21 OF 2020 / 21 OF 2020 / 21
DRAWING NO. D101	OF

APPENDIX E

Asbestos Laboratory Analytical Certificates



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

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

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

EMSL Order: 042201194

Customer ID: PENN50

Customer PO:

Project ID:

Attention: Jeremy Humble

Pennoni Associates, Inc.

515 Grove Street

Haddon Heights, NJ 08035

Phone: (856) 547-0505

Fax: (856) 547-1039

Received Date: 01/20/2022 9:00 PM

Analysis Date: 01/21/2022

Collected Date: 01/20/2022

Project: SDPLD21006/Catharine Elementary

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

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
01-A 042201194-0001	Room 106 - Sheetrock Wall	Brown/White Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
01-B 042201194-0002	Room 108 - Sheetrock Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02-A 042201194-0003	Room 106 - Joint Compound Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
02-B 042201194-0004	Room 108 - Joint Compound Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03-A 042201194-0005	Room 106 - Cove Base Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04-A 042201194-0006	Boys Bath at Rm 107 - Ceramic Tile Wet Bed	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04-B 042201194-0007	Girls Bath at Room 106 - Ceramic Tile Wet Bed	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05-A 042201194-0008	Class Between 106/107 - Linoleum Faux Wood	Brown Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
05-B 042201194-0009	Room 107 Closer - Linoleum Faux Wood	Brown Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
06-A 042201194-0010	Room 106 - Paint Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
06-B 042201194-0011	Room 108 - Paint Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
07-A-Floor Tile 042201194-0012	Room 108 - 12"x12" Floor Tile Tan	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
07-MA-Mastic 042201194-0012A	Room 108 - Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
07-B-Floor Tile 042201194-0013	Room 108 - 12"x12" Floor Tile Tan	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
07-MB-Mastic 042201194-0013A	Room 108 - Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08-A-Floor Tile 042201194-0014	Room 104 - 12"x12" Floor Tile Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/21/2022 18:43:23



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

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

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

EMSL Order: 042201194

Customer ID: PENN50

Customer PO:

Project ID:

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

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
08-MA-Mastic 042201194-0014A	Room 104 - Mastic	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
08-B-Floor Tile 042201194-0015	Room 104 - 12"x12" Floor Tile Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08-MB-Mastic 042201194-0015A	Room 104 - Mastic				Positive Stop (Not Analyzed)

Analyst(s)

Gregory Barry (8)

Rachel Irwin (10)

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

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

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

Initial report from: 01/21/2022 18:43:23

042201194

Pennoni

Laboratory:

EMSL

PAGE

1 of 1

Send invoice to (circle one):

Haddon Heights
(PENNS0)Philadelphia
(PENNS4)Newark/New York
(PNNJ42)

Other: _____

ASBESTOS BULK SAMPLE CHAIN OF CUSTODYProject #: SBPLD 21006Collected by: [Signature]Date: 1/20/22Site: CATHARINE ELEMENTARYTransported by: [Signature]Date: 1/20/22

Section: _____

Received by: AMU DROP BYDate: 1/20/22

Floor: _____

Analyzed by: _____

Date: _____

9 pm

Analysis Turnaround Time

1 Day

☒

2 Day

☐

3 Day

☐

5 Day

☐

7 Day

☐Contact: Jeremy HumbleCell: 609-970-6113Email: j.humble@Pennoni.com☒

PLM

☒

1ST POSITIVE STOP

☐

ANALYZE AS NYC/NYS SAMPLES

☐ANALYZE NOBs VIA PLM 1ST POSITIVE STOP,
THEN ANALYZE 1ST SAMPLE OF EACH MATERIAL SET VIA TEM-NOB☐ANALYZE PLM-NOB 1ST POSITIVE STOP,
THEN TEM-NOB 1ST POSITIVE STOP

Sample ID #	Type of Material	Location
01-A	Sheetrock Wall	Room 106
01-B	"	Room 108
02-A	Joint Compound Wall	Room 106
02-B	"	Room 108
03-A	Cove Base Mastic	Room 106
03-B	"	
04-A	Ceramic Tile Wet Bed	Boys Bath at Rm 107
04-B	"	Girls Bath at Rm 106
05-A	Linoleum - Faux Wood	Closer between 106/107
05-B	"	Room 107 closer
06-A	Paint - Wall	Room 106
06-B	"	Room 108
07-A	12"x12" Floor Tile Tan	Room 108
07-MA	Mastic A/w	<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> RECEIVED EMSL CINNAMINSON, NJ 22 JAN 20 PM 9:02 </div>
07-B	12"x12" Floor Tile Tan	
07-MB	Mastic A/w	
08-A	12"x12" Floor Tile Brown	
08-MA	Mastic A/w	
08-B	12"x12" Floor Tile Brown	Room 104
08-MB	Mastic A/w	

19

APPENDIX F

Niton[®] XLp300 Performance Characteristic Sheet

Performance Characteristic Sheet

EFFECTIVE DATE: September 24, 2004

EDITION NO.: 1

MANUFACTURER AND MODEL:

Make: Niton LLC

Tested Model: XLp 300

Source: ^{109}Cd

Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLI and XLp series:

XLI 300A, XLI 301A, XLI 302A and XLI 303A.

XLp 300A, XLp 301A, XLp 302A and XLp 303A.

XLI 700A, XLI 701A, XLI 702A and XLI 703A.

XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLI and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm² (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm² in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm² film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is not needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm ²)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm ²)		
Substrate	25 th Percentile	Median	75 th Percentile	Pb < 0.25	0.25 ≤ Pb < 1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

APPENDIX G

Lead-Based Paint Data



LEAD-BASED PAINT SCREENING

515 Grove Street, Suite 1B
Haddon Heights, NJ 08035
www.pennoni.com
Tel: (856) 547-0505
Fax: (856) 547-9174

Client: School District of Philadelphia
Project #: SDPLD21006
Facility: Catharine Elementary School - Classroom Modernizations Project
Philadelphia, Pennsylvania

Date: 1/20/2022
Inspector: J. Humble
Inspector Permit #: 059688
XRF Serial #: 90614

Reading No	Building	Floor	Room	Wall	Color	Component	Substrate	Condition	PbC (mg/cm ²)	City of Phila	EPA/HUD	OSHA
A	Catharine Elementary School	Calibration							1.00	OK	OK	OK
B	Catharine Elementary School	Calibration							0.90	OK	OK	OK
C	Catharine Elementary School	Calibration							1.00	OK	OK	OK
1	Catharine Elementary School	First Floor	Room 106	A	Orange	Wall	Plaster	Intact	13.60	Positive	Positive	Positive
2	Catharine Elementary School	First Floor	Room 106	B	Off-White	Wall	Plaster	Intact	9.40	Positive	Positive	Positive
3	Catharine Elementary School	First Floor	Room 106	C	Off-White	Wall	Drywall	Intact	14.40	Positive	Positive	Positive
4	Catharine Elementary School	First Floor	Room 106	C	White	Wall	Plaster	Intact	4.00	Positive	Positive	Positive
5	Catharine Elementary School	First Floor	Room 106	C	White	Wall	Plaster	Intact	7.60	Positive	Positive	Positive
6	Catharine Elementary School	First Floor	Girls Room at Room 106	D	Off-White	Wall	Plaster	Intact	13.80	Positive	Positive	Positive
7	Catharine Elementary School	First Floor	Girls Room at Room 106	A	Off-White	Wall	Drywall	Intact	14.40	Positive	Positive	Positive
8	Catharine Elementary School	First Floor	Girls Room at Room 106	B	Off-White	Door Frame	Metal	Intact	5.70	Positive	Positive	Positive
9	Catharine Elementary School	First Floor	Room 107	B	Off-White	Wall	Plaster	Intact	7.40	Positive	Positive	Positive
10	Catharine Elementary School	First Floor	Room 107	C	Off-White	Wall	Plaster	Intact	6.30	Positive	Positive	Positive
11	Catharine Elementary School	Second Floor	Room 203	C	Off-White	Wall	Plaster	Intact	8.30	Positive	Positive	Positive
12	Catharine Elementary School	Second Floor	Room 203	D	Yellow	Wall	Plaster	Intact	6.80	Positive	Positive	Positive
13	Catharine Elementary School	Second Floor	Room 210	D	Off-White	Wall	Plaster	Intact	7.40	Positive	Positive	Positive
D	Catharine Elementary School	Calibration							1.00	OK	OK	OK
E	Catharine Elementary School	Calibration							1.10	OK	OK	OK
F	Catharine Elementary School	Calibration							1.00	OK	OK	OK

APPENDIX H

City of Philadelphia
Asbestos Inspection Report (AIR)



City of Philadelphia - Department of Public Health
Air Management Services, 2nd Fl. Asbestos Control Unit
321 University Ave. Philadelphia, PA 19104

Office Use Only

Date Received L&I:

Date Received AMS:

Date Inspected

Inspector No.

Asbestos Inspection Report

1. Name of Building / Property: Catharine Elementary School / School District of Philadelphia	Address 6600 Chester Avenue	
2. Name of Building / Property Owner: Catharine Elementary School / School District of Philadelphia	Address 440 North Broad Street, Philadelphia, PA 19130	Phone No. 215-400-5148
3. Name of Philadelphia Certified Investigator: Jeremy Humble	Certification No. AIC18-000023	Contact Information / Email / Phone No. 856-547-0505/jhumble@pennoni.com
L&I Commercial Activity No. (Former Business Privilege License No.) 3702414478	Business Tax ID No. 3133709	

4. Name of Philadelphia Licensed Laboratory: EMSL Analytical Inc	License No. 137	Phone No. 800-220-3675
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5. Scope of Work: (Insert or attach a complete description of the portion of the subject property inspected and the anticipated work that will result in the disturbance of the identified Asbestos Containing Materials (ACMs) (e.g. demolition, asbestos abatement, and / or renovation activities.)

Asbestos inspection was performed in preparation for the planned Classroom Modernizations Project within Rooms 104, 106, 107, 108, 201, 202, 203, 204, 205, 206, 209, 210 and 211 at the Catharine Elementary School. Pennoni's survey did not include areas outside the scope of renovation as well as operational, mechanical or electrical systems, below-grade sampling, or inaccessible crawlspaces associated with foundations or the exterior/roof. If additional materials are discovered, they should be sampled before being impacted. SF of blackboard/tackboard glue dots is for the material only. Not the SF of the boards.
P.I. = Pipe Insulation; B/T Gluedots = Blackboard/Tackboard Glue Dots; P.F = Pipe Fitting

6. ☐ Property has been declared to be in imminent danger (ID) of failure or collapse by the City of Philadelphia Department of Licenses & Inspections. Attached is a copy of the L&I Notice of Violation declaring the property I.D. **Note: INVESTIGATOR MUST BE ON SITE DURING DEMOLITION!

7. (ACMs) identified? ☒ Yes (List Below) ☐ No (explain)

8. Suspected ACM's sampled? ☒ Yes (attached are copies of the laboratory chain of custody and bulk sample results.) ☐ No (Why?)

9. List all identified ACM's located in the planned renovation/demolition areas. Damaged ACM must be listed and then repaired or removed prior to renovation. You (Investigator) must label all ACM that may be left in the work area. (Attached are add'l sheets)

Location	Description	Type (Code 1)	Amount		Condition (Code 2)	Action (Code 3)
			Square	Linear		
Room 104	Pipe Fitting Insulation	FRI		8	ND	REM
Room 104	Pipe Insulation 2-6"	FRI		32	ND	REM
Room 104	Blackboard/Tackboard Glue Dots	NF2	100		ND	REM
Room 104	FT VAT 12x12 Brown and Mastic	NF1	30		ND	REM
Room 104	Sink Undercoat Mastic	NF2	6		ND	REM
Room 106	Pipe Fitting Insulation	FRI		16	ND	REM

Code 1

FRI - Friable
NF1 - Non-Friable, Cat. 1
NF2 - Non-Friable, Cat. 2

Code 2

DD - Deteriorated or
Delaminated
ND - Non-Damaged

Code 3

REM - Removal necessary prior to Demo/Reno
NRN - No removal necessary, label ACM
REP - Repair & Label ACM, removal not necessary

10. I hereby certify that the foregoing statements are true and the information contained in this report is true. This certification is made subject to the penalties set forth in 18 PA. C.S. S4904 relating to unsworn falsification to authorities. Furthermore I certify that the inspection, sampling, and labeling requirements of section X of the Asbestos Control Regulation (ACR) have been met. The building owner has been notified of the ACR requirements and given a copy of this report. If the inspection has revealed ACM which will be disturbed by the proposed work or if it has revealed ACM in bad condition, the building owner has been notified to remove or repair the ACM in accordance with the ACR prior to renovation or demolition activity.

11. Signature of Certified Asbestos Investigator: 	Date: 2/1/22	Signature of Building Owner:	Date:
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[illegible]

February 2, 2022

SDPLD21006

School District of Philadelphia
Attn: Mr. F. Gaeton Tavella
Office of Environmental Management and Services
Environmental Compliance Manager
440 North Broad Street
Philadelphia, Pennsylvania 19130

**RE: ASBESTOS AND LEAD-BASED PAINT INSPECTION
CLASSROOM MODERNIZATIONS PROJECT
CATHARINE SCHOOL ANNEX (ULCS#1251)
6900 GREENWAY AVENUE
PHILADELPHIA, PENNSYLVANIA 19142**

Dear Mr. Tavella:

Pennoni is providing this report to the **School District of Philadelphia** documenting the asbestos and lead-based paint inspection conducted at the above referenced location. Activities completed as part of the investigation included a survey of the proposed renovation areas for asbestos-containing materials (ACM) and lead-based paint (LBP) as defined in renovation drawings dated 10/9/21. The following information details the results of our efforts.

BACKGROUND

Pennoni reviewed renovation plans and historical data for the school prior to the start of the project to determine if known ACM may be present and potentially disturbed by the planned project.

ASBESTOS SURVEY

Pennoni performed an asbestos survey on January 20, 2022, to identify accessible ACM within the proposed renovation areas. The asbestos survey was conducted by a team of Pennoni's City of Philadelphia Asbestos Investigators and United States Environmental Protection Agency (USEPA) certified Asbestos Building Inspectors (see Appendix A – Inspector Credentials).

During the inspection, 25 samples of 11 identified suspect ACM were collected (see Appendix B – Asbestos Field Inspection Forms, Appendix C – Site Photographs, Appendix D – Sample Location Drawings). The following suspect ACMs, listed here by homogeneous identification number, were identified during the survey:

- | | |
|-------------------------------|-------------------------------------|
| 1. 2'x4' Ceiling Tile (NAD) | 7. Sheetrock Ceiling (NAD) |
| 2. Sheetrock Wall (NAD) | 8. Joint Compound Ceiling (NAD) |
| 3. Joint Compound Wall (NAD) | 9. Wall Paint (NAD) |
| 4. Covebase Mastic (NAD) | 10. 12"x12" Gray Floor Tile (NAD*) |
| 5. Sink Undercoating (NAD) | 11. 12"x12" Green Floor Tile (NAD*) |
| 6. Ceramic Tile Wet Bed (NAD) | |

(Neg) – Negative for Asbestos Content; (POS) – Positive for Asbestos Content;
*Previously Identified Non-ACM

The samples were properly packaged, labeled and transported to EMSL Analytical, Inc. (EMSL), located in Cinnaminson, New Jersey. EMSL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP). The samples were analyzed for asbestos content utilizing Polarized Light Microscopy (PLM) via EPA Method 600/R-93/116.

Analytical results indicate none of the sampled materials contain greater than 1% asbestos. Results are summarized in the attached Excel table in Appendix B with full analytical certificates included in Appendix E.

LEAD-BASED PAINT SCREENING

On January 20, 2022, Mr. Jeremy Humble, one of Pennoni's United States Environmental Protection Agency (USEPA) trained and Commonwealth of Pennsylvania licensed Risk Assessors (see Appendix A – Inspector Credentials) conducted a screening of the planned renovation areas to determine if LBP is present on any of the existing painted surfaces or building components. The inspection and testing were generally performed following the United States Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing – July 2012 and the City of Philadelphia Department of Health (DOH). Our inspection included interior surfaces associated with the planned renovation areas, however, should not be considered a full HUD Lead Paint Inspection.

The testing was performed on-site utilizing a Niton® XLp300A portable x-ray fluorescence lead-in-paint analyzer (XRF). Homogeneous painted surfaces were scanned with the handheld XRF which yielded readings of lead content of tested paint.

The XRF results are based on the Performance Characteristic Sheets (PCS) and were obtained in the K&L Mode. This mode takes reading results and errors for both K and L-shell readings and corrects for various substrates. The "Lead Detected in the mg/cm² total" field is represented as a corrected value of the analyzer which represents the component as to being positive or negative. This is the result reported on the data sheets. Please refer to Appendix F for the instrument performance characteristic sheet.

HUD and the USEPA defines lead-based paint as a painted surface containing greater than or equal to one milligram of lead per square centimeter (1.0 mg/cm²) as measured by a hand-held XRF lead-in-paint analyzer or greater than 0.5% by weight as measured by laboratory analysis of collected paint chip samples. The City of Philadelphia DOH defines lead-based paint as a painted surface containing greater than or equal to 0.7 milligram of lead per square centimeter (0.7 mg/cm²) as measured by a hand-held XRF lead-in-paint analyzer (see components designated as red in Appendix G).

OSHA regulation 24 CFR 1926.62 OSHA Lead in Construction Standard has established a threshold of any level of lead above the detection level is defined as lead containing (i.e., greater than 0.0 ug/cm²). XRF readings between 0.1 ug/cm² and 0.6 ug/cm² has been identified as OSHA positive (see components designated as blue in Appendix G).

Seventeen surfaces were tested throughout the renovation areas, of which none exceeded the City of Philadelphia threshold for LBP (see Appendix G – Lead-Based Paint Data). Each of the readings collected were 0.0 ug/cm².

LIMITATIONS

The goal of the asbestos and lead-based paint survey was to identify readily accessible suspect building materials in preparation for planned renovation activities. Pennoni's survey did not include areas outside the project scope of work as well as operational utility systems, below-grade or subfloor sampling, concealed pipe chase spaces, or inaccessible crawlspaces associated with foundations. Hazardous materials may be present in these areas.

Quantities in this report are estimated and should be verified for bidding purposes. Pennoni should be contacted immediately if renovation activities uncover materials that are not identified in this report.

SUMMARY

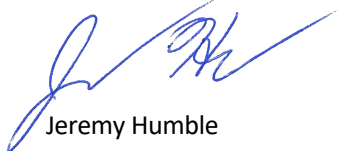
In summary, Pennoni conducted an asbestos and lead-based paint survey at the Catharine School Annex. Based on the results of the samples collected, planned renovation activities may proceed associated with the Classroom Modernizations project.

A City of Philadelphia Asbestos Inspection Report (AIR) is included in Appendix H.

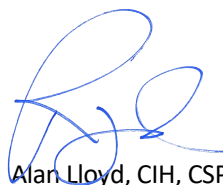
If you have any questions concerning this report or require additional information, please feel free to contact us at 856-547-0505.

Sincerely,

PENNONI ASSOCIATES INC.



Jeremy Humble
Project Manager



Alan Lloyd, CIH, CSP, ENV SP
Vice President, EHS Practice Leader

tp

Attachments

- Appendix A – Inspector Credentials
- Appendix B – Asbestos Field Inspection Forms
- Appendix C – Site Photographs
- Appendix D – Sample Location Drawings
- Appendix E – Asbestos Laboratory Analytical Certificates
- Appendix F – Niton® XLp300 Performance Characteristic Sheet
- Appendix G – Lead-Based Paint Data
- Appendix H – City of Philadelphia Asbestos Inspection Report (AIR)

APPENDIX A

Inspector Credentials

Asbestos Investigator
Certified by AMS



Jeremy Humble

Certificate #: AIC18-000023
Issue Date: 04/09/2021
Expiration: 03/31/2022



City of Philadelphia
Dept. of Public Health
Air Management
Services



Inspector in good standing. Pending receipt of physical cards.
Refresher expiring in Dec 2022 attached.

Certificate of Completion

awarded to

Jeremy Humble

for successfully completing the prescribed course of study in

New Jersey Lead Inspector/Risk Assessor Refresher Housing and Public Buildings

in accordance with EPA, HUD, and NJDH Guidelines

presented by

ACCESS TRAINING SERVICES, INC.
7921 River Road, Pennsauken, New Jersey 08110
(856) 665-3449

12/15/20

Course Date

12/15/20

Exam Date

12/15/22

Expiration Date

Not Provided

Social Security Number

ACC-1220-18-005

Certificate Number


Mark K. Schlager
Training Director

Certificate of Completion

awarded to

Matthew Thomas

for successfully completing the prescribed course of study in

**Pennsylvania Asbestos
Building Inspector Initial Course**
under TSCA Title II

presented by

ACCESS TRAINING SERVICES, INC.
7921 River Road, Pennsauken, NJ 08110
(856) 665-3449

11/1-3/21

Course Date

11/3/21

Exam Date

11/3/22


Expiration Date

Not Provided

Social Security Number

ACC-1121-5-001

Certificate Number



Mark K. Schlager
Training Director

APPENDIX B

Asbestos Field Inspection Forms

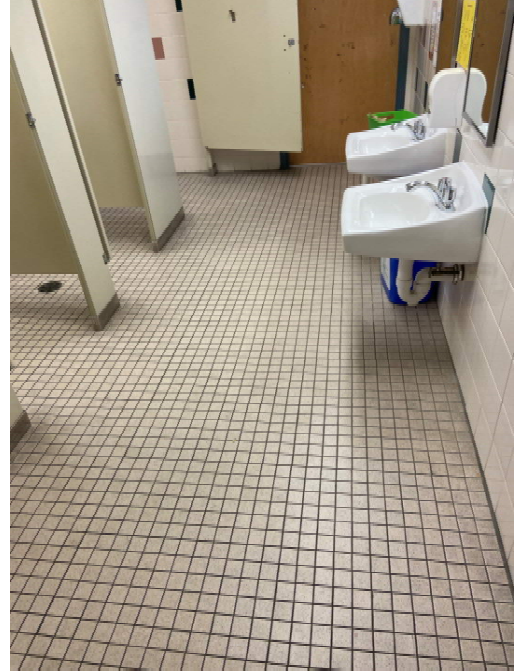
		School District of Philadelphia		AHERA Three-Year Reinspection 2018-2019							Reinspection Date: 12/13/2018				
		Catharine School Annex/Truancy Court		Room by Room Location Log Report							Building Inspector: Ryan Hutsell				
		6900 Greenway Avenue, Philadelphia, PA 19142									Certification Number: ACC-0218-6-025				
		ULCS# 1251									Management Planner: Monique Causley				
		Year Built: 1937									Certification Number: 745897				
<i>I e m</i>	<i>F l o</i>	<i>On Site Room Name</i>	<i>System Affected</i>	<i>Material Description</i>	<i>Confirmed/Assumed/NAD/ Non Suspect ACM</i>	<i>Amount of Material</i>	<i>SF LF EA</i>	<i>Amount of Damage</i>	<i>SF LF EA</i>	<i>Color required for VAT</i>	<i>Comments/Description/Notes</i>	<i>Attic/ Crawl Space Ranking</i>	<i>Damage Potential (DP)</i>	<i>Newly Friable (NF)</i>	<i>Response Action (RA)</i>
1	1	Kindergarten Classroom 102	N/A	Floor Tile VAT 12" x 12"	NAD	900	SF	0	SF	Grey			N/A	N/A	N/A
1	1	Kindergarten Classroom 102	N/A	Sheetrock Wall	NAD	2700	SF	0	SF				N/A	N/A	N/A
1	1	Kindergarten Classroom 102	N/A	Ceiling Tile 2' x 4'	NAD	900	SF	0	SF				N/A	N/A	N/A
1	1	Kindergarten Classroom 102	N/A	Sink Undercoat Mastic	NAD	6	SF	0	SF		1 Sink - 6 SF		N/A	N/A	N/A
1	1	Kindergarten Classroom 102	N/A	Cove Base Mastic	NAD	20	SF	0	SF				N/A	N/A	N/A
1	1	Restroom between Kindergarten Classrooms 102 and 104	N/A	Ceramic Tile Floors	Non Suspect ACM	180	SF	0	SF				N/A	N/A	N/A
1	1	Restroom between Kindergarten Classrooms 102 and 104	N/A	Ceramic Tile Walls	Non Suspect ACM	540	SF	0	SF				N/A	N/A	N/A
1	1	Restroom between Kindergarten Classrooms 102 and 104	N/A	Ceramic Tile Wet Bed	NAD	180	SF	0	SF				N/A	N/A	N/A
1	1	Restroom between Kindergarten Classrooms 102 and 104	N/A	Sheetrock Ceiling	NAD	180	SF	0	SF				N/A	N/A	N/A
1	1	Kindergarten Classroom 104	N/A	Floor Tile VAT 12" x 12"	NAD	900	SF	0	SF	Grey			N/A	N/A	N/A
1	1	Kindergarten Classroom 104	N/A	Sheetrock Wall	NAD	2700	SF	0	SF				N/A	N/A	N/A
1	1	Kindergarten Classroom 104	N/A	Ceiling Tile 2' x 4'	Non Suspect ACM	900	SF	1	EA				N/A	N/A	N/A
1	1	Kindergarten Classroom 104	N/A	Sink Undercoat Mastic	NAD	6	SF	0	SF		1 Sink - 6 SF		N/A	N/A	N/A
1	1	Kindergarten Classroom 104	N/A	Cove Base Mastic	NAD	20	SF	0	SF				N/A	N/A	N/A
1	2	Men's Staff Restroom next to Kitchen 212	N/A	Ceramic Tile Floors	Non Suspect ACM	64	SF	0	SF				N/A	N/A	N/A
1	2	Men's Staff Restroom next to Kitchen 212	N/A	Ceramic Tile Walls	Non Suspect ACM	192	SF	0	SF				N/A	N/A	N/A
1	2	Men's Staff Restroom next to Kitchen 212	N/A	Ceramic Tile Wet Bed	NAD	64	SF	0	SF				N/A	N/A	N/A
1	2	Men's Staff Restroom next to Kitchen 212	N/A	Sheetrock Ceiling	NAD	64	SF	0	SF				N/A	N/A	N/A
1	2	Women's Staff Restroom next to Kitchen 212	N/A	Ceramic Tile Floors	Non Suspect ACM	120	SF	0	SF				N/A	N/A	N/A
1	2	Women's Staff Restroom next to Kitchen 212	N/A	Ceramic Tile Walls	Non Suspect ACM	360	SF	0	SF				N/A	N/A	N/A
1	2	Women's Staff Restroom next to Kitchen 212	N/A	Ceramic Tile Wet Bed	NAD	120	SF	0	SF				N/A	N/A	N/A
1	2	Women's Staff Restroom next to Kitchen 212	N/A	Sheetrock Ceiling	NAD	120	SF	3	SF				N/A	N/A	N/A
1	2	Vestibule outside Staff Restrooms	N/A	Sheetrock Ceiling	NAD	35	SF	0	SF				N/A	N/A	N/A
1	2	Vestibule outside Staff Restrooms	N/A	Sheetrock Wall	NAD	240	SF	0	SF				N/A	N/A	N/A
1	2	Vestibule outside Staff Restrooms	N/A	Floor Tile VAT 12" x 12"	NAD	35	SF	0	SF	Green			N/A	N/A	N/A
1	2	Classroom 213	N/A	Cove Base Mastic	NAD	38	SF	0	SF				N/A	N/A	N/A
1	2	Classroom 213	N/A	Floor Tile VAT 12" x 12"	NAD	1012	SF	0	SF	Green			N/A	N/A	N/A
1	2	Classroom 213	N/A	Sheetrock Wall	NAD	3036	SF	0	SF				N/A	N/A	N/A
1	2	Classroom 213	N/A	Ceiling Tile 2' x 4'	NAD	1012	SF	15	EA				N/A	N/A	N/A
1	2	Storage Closet inside Classroom 213	N/A	Cove Base Mastic	NAD	8	SF	0	SF				N/A	N/A	N/A
1	2	Storage Closet inside Classroom 213	N/A	Floor Tile VAT 12" x 12"	NAD	72	SF	0	SF	Green			N/A	N/A	N/A
1	2	Storage Closet inside Classroom 213	N/A	Sheetrock Wall	NAD	216	SF	0	SF				N/A	N/A	N/A
1	2	Storage Closet inside Classroom 213	N/A	Ceiling Tile 2' x 4'	NAD	72	SF	0	SF				N/A	N/A	N/A

APPENDIX C

Site Photographs



Photograph 1: HID 02. Sheetrock wall (NAD),
HID 03. Joint Compound Wall (NAD),
HID 04. Covebase Mastic (NAD) and
HID 09. Wall Paint (NAD)



Photograph 2: HID 06. Ceramic Tile Wet Bed (NAD)



Pennoni Associates, Inc.
515 Grove Street, Suite 1B
Haddon Heights, New Jersey 08035

Job No. SDPLD21006

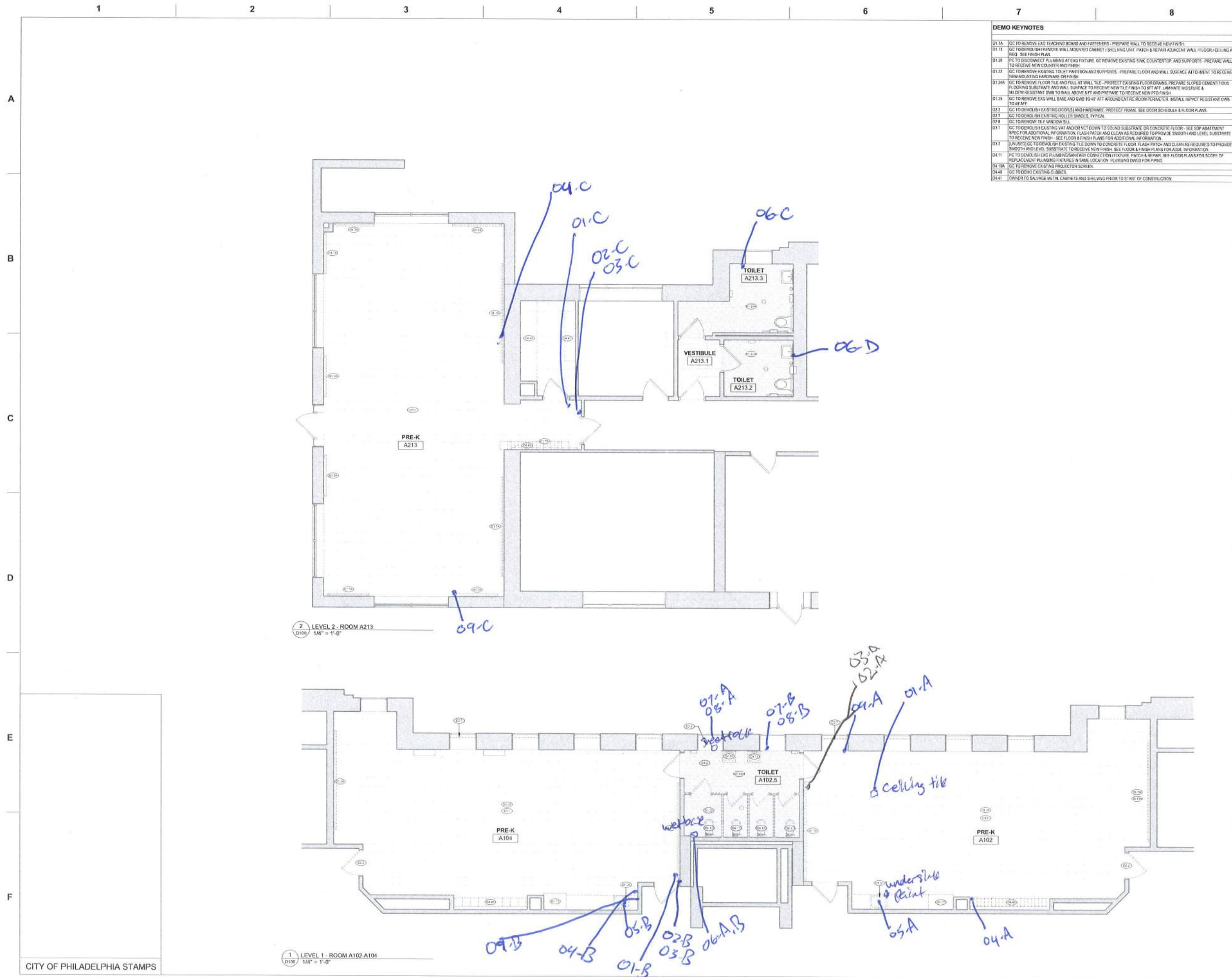
Date Taken: JANUARY 20, 2022

ASBESTOS INSPECTION
CATHARINE SCHOOL ANNEX
6900 GREENWAY AVENUE
PHILADELPHIA, PENNSYLVANIA 19142

SITE PHOTOGRAPHS

APPENDIX D

Sample Location Drawings



DEMO KEYNOTES	
01.1A	GC TO REMOVE EXG TEACHING BOARD AND PARTNERS - PREPARE WALL TO RECEIVE NEW FINISH
01.1B	GC TO DEMOLISH/REMOVE WALL MOUNTED CABINET / SHELVING UNIT. PATCH & REPAIR ADJACENT WALL / FLOOR / CEILING AS REQ. SEE FINISH PLAN.
01.2B	PC TO DISCONNECT PLUMBING AT EXG FIXTURE. GC REMOVE EXISTING SINK, COUNTERTOP AND SUPPORTS - PREPARE WALL TO RECEIVE NEW COUNTERTOP AND FINISH.
01.2C	GC TO REMOVE EXISTING TOILET PARTITION AND SUPPORTS - PREPARE FLOOR AND WALL SURFACE ATTACHMENT TO RECEIVE NEW MOUNTING HARDWARE OR FINISH.
01.2A	GC TO REMOVE FLOOR TILE AND PULL-UP WALL TILE - PROTECT EXISTING FLOOR DRAINS. PREPARE SLOPED CEMENTITIOUS FLOORING SUBGRADE AND WALL SURFACE TO RECEIVE NEW TILE FINISH TO 8" AFF. LAMINATE MOISTURE & MILDEW-RESISTANT GWB TO WALL ABOVE 8" AFF AND PREPARE TO RECEIVE NEW FINISH.
01.2S	GC TO REMOVE EXG WALL BASE AND GWB TO 4" AFF AROUND ENTIRE ROOM PERIMETER. INSTALL IMPACT RESISTANT GWB TO 4" AFF.
02.2	GC TO DEMOLISH EXISTING DOOR(S) AND HARDWARE. PROTECT FRAME. SEE DOOR SCHEDULE & FLOOR PLANS.
02.7	GC TO DEMOLISH EXISTING ROLLER SHADES, TYPICAL.
02.8	GC TO REMOVE TILE WINDOW SILL.
03.1	GC TO DEMOLISH CEILING AND RAY ANCHOR VCT DOWN TO SOUND SUBSTRATE OR CONCRETE FLOOR - SEE 03P ABATEMENT SPEC FOR ADDITIONAL INFORMATION. FLASH/PATCH AND CLEAN AS REQUIRED TO PROVIDE SMOOTH AND LEVEL SUBSTRATE TO RECEIVE NEW FINISH - SEE FLOOR & FINISH PLANS FOR ADDITIONAL INFORMATION.
03.2	UNLESS GC TO DEMOLISH EXISTING TILE DOWN TO CONCRETE FLOOR. FLASH/PATCH AND CLEAN AS REQUIRED TO PROVIDE SMOOTH AND LEVEL SUBSTRATE TO RECEIVE NEW FINISH - SEE FLOOR & FINISH PLANS FOR ADDITIONAL INFORMATION.
04.1B	PC TO DEMOLISH EXG PLUMBING/SANITARY CONNECTION/FIXTURE. PATCH & REPAIR. SEE FLOOR PLANS FOR SCOPE OF REPLACEMENT PLUMBING FIXTURES IN SAME LOCATION. PLUMBING UNQS FOR PIPING.
04.1B	GC TO REMOVE EXISTING PROJECTOR SCREEN.
04.4D	GC TO DEMO EXISTING CURBIES.
04.4I	OWNER TO SALVAGE METAL CABINETS AND SHELVING PRIOR TO START OF CONSTRUCTION.

THE SCHOOL DISTRICT OF PHILADELPHIA

OFFICE OF CAPITAL PROGRAMS

440 NORTH BROAD STREET
PHILADELPHIA, PA 19138 - 4015
(215) 400 - 4730 | (215) 400 - 4731 (fax)
www.philasd.org

SEAL:

ARCHITECT

OJ Collaborative
4818 Baltimore Avenue
Philadelphia, PA 19143
Phone: (215) 386-8191
Email: mummammar@ojcollaborative.com
Alyssa Mummammar, AIA
www.ojcollaborative.com

MEP ENGINEER

Gannett Fleming, Inc.
801 Market Street, Suite 2600
Philadelphia, PA 19103
Phone: (215) 517-9100
Email: dweaver@gannett.com
Alyssa Fleming, PE
www.gannettflaming.com

Design Development
October 9, 2021

#	DATE	REVISION
1	10/09/21	SCHOOL & LOCATION
2	10/09/21	Catharine Elementary & Annex 4400 Chester Ave & 6900 Greenway Ave

PROJECT TITLE
Classroom Modernizations

DRAWING TITLE
DEMO FLOOR PLANS - ANNEX

DRAWING SCALE 1/4" = 1'-0"	
LOCATION NO. 5530	FILE NO. Project Number
DRAWN BY Author	CHECKED BY Checker
GC: B-MXC	OF: 2020 / 21
MC: B-MXC	OF: 2020 / 21
PC: B-MXC	OF: 2020 / 21
EC: B-MXC	OF: 2020 / 21

DRAWING NO.
D100
OF

APPENDIX E

Asbestos Laboratory Analytical Certificates



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

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

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

EMSL Order: 042201193

Customer ID: PENN50

Customer PO:

Project ID:

Attention: Jeremy Humble

Pennoni Associates, Inc.

515 Grove Street

Haddon Heights, NJ 08035

Phone: (856) 547-0505

Fax: (856) 547-1039

Received Date: 01/20/2022 9:00 AM

Analysis Date: 01/20/2022 - 01/21/2022

Collected Date:

Project: SDPLD21006 / Catharine Annex

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

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
01-A 042201193-0001	A102 - 2'x4' Ceiling Tile	White Fibrous Homogeneous	50% Cellulose 30% Min. Wool	20% Non-fibrous (Other)	None Detected
01-B 042201193-0002	A104 - 2'x4' Ceiling Tile	White Fibrous Homogeneous	50% Cellulose 30% Min. Wool	20% Non-fibrous (Other)	None Detected
01-C 042201193-0003	A213 - 2'x4' Ceiling Tile	Gray/White Fibrous Homogeneous	60% Cellulose 30% Min. Wool	10% Non-fibrous (Other)	None Detected
02-A 042201193-0004	A102 - Sheetrock Wall	Brown/White Fibrous Homogeneous	15% Cellulose 5% Glass	80% Non-fibrous (Other)	None Detected
02-B 042201193-0005	A104 - Sheetrock Wall	Brown/White Fibrous Homogeneous	15% Cellulose 5% Glass	80% Non-fibrous (Other)	None Detected
02-C 042201193-0006	A213 - Sheetrock Wall	Brown/White Fibrous Homogeneous	15% Cellulose 3% Glass	82% Non-fibrous (Other)	None Detected
03-A 042201193-0007	A102 - Joint Compound Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03-B 042201193-0008	A104 - Joint Compound Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
03-C 042201193-0009	A213 - Joint Compound Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04-A 042201193-0010	A102 - Cove Base Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04-B 042201193-0011	A104 - Cove Base Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
04-C 042201193-0012	A213 - Cove Base Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
05-A 042201193-0013	A102 - Sink Undercoating	Tan Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
05-B 042201193-0014	A104 - Sink Undercoating	Tan Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
06-A 042201193-0015	A102.5 - Ceramic Tile Wet Bed	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
06-B 042201193-0016	A102.5 - Ceramic Tile Wet Bed	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 01/21/2022 09:54:36



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

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

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

EMSL Order: 042201193

Customer ID: PENN50

Customer PO:

Project ID:

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

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
06-C 042201193-0017	2nd Floor Womens Staff Bath - Ceramic Tile Wet Bed	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
06-D 042201193-0018	2nd Floor Mens Staff Bath - Ceramic Tile Wet Bed	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
07-A 042201193-0019	A102 Bath A102.5 - Sheetrock Ceiling	Brown/White Fibrous Homogeneous	15% Cellulose 3% Glass	82% Non-fibrous (Other)	None Detected
07-B 042201193-0020	A102 Bath A102.5 - Sheetrock Ceiling	Brown/White Fibrous Homogeneous	20% Cellulose 2% Glass	78% Non-fibrous (Other)	None Detected
08-A 042201193-0021	A102 Bath A102.5 - Joint Compound Ceiling	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
08-B 042201193-0022	A102 Bath A102.5 - Joint Compound Ceiling	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
09-A 042201193-0023	A102 - Paint Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
09-B 042201193-0024	A104 - Paint Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
09-C 042201193-0025	Room A213 - Paint Wall	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

Andrew Borsos (12)

Gregory Barry (9)

Gabrielle DiDonato (4)

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

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

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

Initial report from: 01/21/2022 09:54:36

042201193

Pennoni

Laboratory:

EMSL

PAGE

1 of 2

Send invoice to (circle one):

Haddon Heights
(PENNS0)Philadelphia
(PENNS4)Newark/New York
(PNNJ42)

Other: _____

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Project #: SDPLD 21006
 Site: CATHARINE ANNEX
 Section: _____
 Floor: _____

Collected by: JOK
 Transported by: JOK
 Received by: LMN drop BY
 Analyzed by: _____

Date: 1/20/22
 Date: 1/20/22
 Date: 1/20/22
 Date: 9 pm

Analysis Turnaround Time1 Day ☒2 Day ☐3 Day ☐5 Day ☐7 Day ☐Contact: Seeny HumbleCell: 609-970-6113Email: jhumble@pennoni.com

PLM



1ST POSITIVE STOP



ANALYZE AS NYC/NYS SAMPLES

ANALYZE NOBs VIA PLM 1ST POSITIVE STOP,
THEN ANALYZE 1ST SAMPLE OF EACH MATERIAL SET VIA TEM-NOBANALYZE PLM-NOB 1ST POSITIVE STOP,
THEN TEM-NOB 1ST POSITIVE STOP

Sample ID #	Type of Material	Location
01-A	2'x4' Ceiling Tile	A102
01-B	"	A104
01-C	"	A213
02-A	Sheetrock Wall	A102
02-B	"	A104
02-C	"	A213
03-A	Joint Compound Wall	A102
03-B	"	A104
03-C	"	A213
04-A	Cove Base Mastic	A102
04-B	"	A104
04-C	"	A213
05-A	Sink Undercoating	A102
05-B	"	A104
06-A	Ceramic Tile Wet Bed	A102.5
06-B	"	A102.5
06-C	"	2ND FL WOREPS STAFF BATH
06-D	"	2ND FL MENS STAFF BATH
07-A	Sheetrock Ceiling	A102 BATH - A102.5
07-B	"	" "
08-A	Joint Compound Ceiling	A102 BATH "
08-B	Ceiling "	" "

RECEIVED
 EMSL
 CINCINNATI, OH
 22 JAN 20 PM 9:02

25

APPENDIX F

Niton[®] XLp300 Performance Characteristic Sheet

Performance Characteristic Sheet

EFFECTIVE DATE: September 24, 2004

EDITION NO.: 1

MANUFACTURER AND MODEL:

Make: Niton LLC

Tested Model: XLp 300

Source: ^{109}Cd

Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLI and XLp series:

XLI 300A, XLI 301A, XLI 302A and XLI 303A.

XLp 300A, XLp 301A, XLp 302A and XLp 303A.

XLI 700A, XLI 701A, XLI 702A and XLI 703A.

XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLI and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm² (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm² in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm² film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is not needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm ²)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF results.

Compute the average of all ten re-test XRF results.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm ²)		
Substrate	25 th Percentile	Median	75 th Percentile	Pb < 0.25	0.25 ≤ Pb < 1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

APPENDIX G

Lead-Based Paint Data



LEAD-BASED PAINT SCREENING

515 Grove Street, Suite 1B
Haddon Heights, NJ 08035
www.pennoni.com
Tel: (856) 547-0505
Fax: (856) 547-9174

Client: School District of Philadelphia
Project #: SDPLD21006
Facility: Catharine School Annex - Classroom Modernizations Project
Philadelphia, Pennsylvania

Date: 1/20/2022
Inspector: J. Humble
Inspector Permit #: 059688
XRF Serial #: 90614

Reading No	Building	Floor	Room	Wall	Color	Component	Substrate	Condition	PbC (mg/cm ²)	City of Phila	EPA/HUD	OSHA
A	Catharine Annex	Calibration							1.00	OK	OK	OK
B	Catharine Annex	Calibration							0.90	OK	OK	OK
C	Catharine Annex	Calibration							0.90	OK	OK	OK
1	Catharine Annex	First Floor	Room 102	A	Off-White	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
2	Catharine Annex	First Floor	Room 102	A	Off-White	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
3	Catharine Annex	First Floor	Room 102	C	Blue	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
4	Catharine Annex	First Floor	Room 102	C	Off-White	Window Sill	Wood	Intact	0.00	Negative	Negative	Negative
5	Catharine Annex	First Floor	Room 102	B	Off-White	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
6	Catharine Annex	First Floor	Room 102	B	Blue	Door Frame	Metal	Intact	0.00	Negative	Negative	Negative
7	Catharine Annex	First Floor	Room 102 Bathroom	A	Off-White	Wall	Ceramic Tile	Intact	0.00	Negative	Negative	Negative
8	Catharine Annex	First Floor	Room 102 Bathroom	Center	Off-White	Ceiling	Drywall	Intact	0.00	Negative	Negative	Negative
9	Catharine Annex	First Floor	Room 104	D	Off-White	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
10	Catharine Annex	First Floor	Room 104	C	Blue	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
11	Catharine Annex	First Floor	Room 104	C	Off-White	Window Sill	Wood	Intact	0.00	Negative	Negative	Negative
12	Catharine Annex	First Floor	Room 104	A	Blue	Door Frame	Metal	Intact	0.00	Negative	Negative	Negative
13	Catharine Annex	Second Floor	Room 213	A	Off-White	Door Frame	Drywall	Intact	0.00	Negative	Negative	Negative
14	Catharine Annex	Second Floor	Room 213	A	Off-White	Window Sill	Wood	Intact	0.00	Negative	Negative	Negative
15	Catharine Annex	Second Floor	Room 213	D	Blue	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
16	Catharine Annex	Second Floor	Room 213	D	Blue	Wall	Drywall	Intact	0.00	Negative	Negative	Negative
17	Catharine Annex	Second Floor	Room 213	C	Blue	Door Frame	Metal	Intact	0.00	Negative	Negative	Negative
D	Catharine Annex	Calibration							1.00	OK	OK	OK
E	Catharine Annex	Calibration							1.00	OK	OK	OK
F	Catharine Annex	Calibration							1.00	OK	OK	OK

APPENDIX H

City of Philadelphia
Asbestos Inspection Report (AIR)



City of Philadelphia - Department of Public Health
Air Management Services, 2nd Fl. Asbestos Control Unit
321 University Ave. Philadelphia, PA 19104

Office Use Only

Date Received L&I:

Date Received AMS:

Date Inspected

Inspector No.

Asbestos Inspection Report

1. Name of Building / Property: Catharine School Annex / School District of Philadelphia	Address 6900 Greenway Avenue	
2. Name of Building / Property Owner: Catharine School Annex / School District of Philadelphia	Address 440 North Broad Street, Philadelphia, PA 19130	Phone No. 215-400-5148
3. Name of Philadelphia Certified Investigator: Jeremy Humble L&I Commercial Activity No. (Former Business Privilege License No.) 3702414478	Certification No. AIC18-000023 Business Tax ID No. 3133709	Contact Information / Email / Phone No. 856-547-0505/jhumble@pennoni.com

4. Name of Philadelphia Licensed Laboratory: EMSL Analytical Inc	License No. 137	Phone No. 800-220-3675
--	---------------------------	----------------------------------

5. Scope of Work: (Insert or attach a complete description of the portion of the subject property inspected and the anticipated work that will result in the disturbance of the identified Asbestos Containing Materials (ACMs) (e.g. demolition, asbestos abatement, and / or renovation activities.)

Asbestos inspection was performed in preparation for the planned Classroom Modernizations Project within the Annex Building. Pennoni's survey did not include areas outside the scope of renovation as well as operational, mechanical or electrical systems, below-grade sampling, or inaccessible crawlspaces associated with foundations or the exterior/roof. If additional materials are discovered, they should be sampled before being impacted.

6. ☐ Property has been declared to be in imminent danger (ID) of failure or collapse by the City of Philadelphia Department of Licenses & Inspections. Attached is a copy of the L&I Notice of Violation declaring the property I.D. **Note: INVESTIGATOR MUST BE ON SITE DURING DEMOLITION!

7. (ACMs) identified? ☐ Yes (List Below) ☒ No (explain) **see attached results.**

8. Suspected ACM's sampled? ☒ Yes (attached are copies of the laboratory chain of custody and bulk sample results.) ☐ No (Why?)

9. List all identified ACM's located in the planned renovation/demolition areas. Damaged ACM must be listed and then repaired or removed prior to renovation. You (Investigator) must label all ACM that may be left in the work area. (Attached are add'l sheets)

Location	Description	Type (Code 1)	Amount		Condition (Code 2)	Action (Code 3)
			Square	Linear		

Code 1

FRI - Friable
NF1 - Non-Friable, Cat. 1
NF2 - Non-Friable, Cat. 2

Code 2

DD - Deteriorated or
Delaminated
ND - Non-Damaged

Code 3

REM - Removal necessary prior to Demo/Reno
NRN - No removal necessary, label ACM
REP - Repair & Label ACM, removal not necessary

10. I hereby certify that the foregoing statements are true and the information contained in this report is true. This certification is made subject to the penalties set forth in 18 PA. C.S. S4904 relating to unsworn falsification to authorities. Furthermore I certify that the inspection, sampling, and labeling requirements of section X of the Asbestos Control Regulation (ACR) have been met. The building owner has been notified of the ACR requirements and given a copy of this report. If the inspection has revealed ACM which will be disturbed by the proposed work or if it has revealed ACM in bad condition, the building owner has been notified to remove or repair the ACM in accordance with the ACR prior to renovation or demolition activity.

11. Signature of Certified Asbestos Investigator: 	Date: 2/1/22	Signature of Building Owner:	Date:
---	-----------------	------------------------------	-------