

Removal of Asbestos Containing
Material (ACM), Soil, and
Construction of a Semi-
Permanent Barrier

Whittier Middle School
256 Concord Street
Haverhill, Massachusetts 01830

Project #H-0808-H

HUB TESTING LABORATORY, INC.

Environmental Testing Service



95 Beaver Street - Waltham, MA 02453
(781) 893-8330 (781) 893-4414 (fax)

WHITTIER GREENLEAF SCHOOL, HAVERHILL, MA

NOTICE TO BIDDERS

- Scope of Work:** The Contractor shall furnish all labor, equipment, materials, and accessories necessary for removing the asbestos containing materials in two separate areas at the Whittier Greenleaf School 256 Concord Street Haverhill, MA 01830 in accordance with the requirements of the Commonwealth of Massachusetts and all Federal Regulations.
- Bid Pick-up:** The bid package will be available at the Pre-Bid Inspection from Hub Testing Laboratory, Inc., 95 Beaver Street, Waltham, MA on Wednesday, August 6, 2008 for a non-refundable fee of \$25.00.
- Pre-bid Inspection:** A Pre-bid Inspection will originate at 11:00 a.m. on Wednesday, August 6, 2008 at the Main Lobby of the Whittier Greenleaf School, 256 Concord Street, Haverhill, MA.
- Bid Due Date:** Bids are for the Removal of Asbestos Containing Materials, asbestos contaminated soil, and the construction of a polyethylene sheet containment in two separate areas. The contractor's bid price shall include the cost for removal of all asbestos containing materials and construction of a semi-permanent barrier as specified in this project. Bids will be due on Wednesday, August 13, 2008 by 3:00 p.m. at Hub Testing Laboratory. The three page City of Haverhill, FORM FOR GENERAL BID may be mailed to 95 Beaver Street Waltham, MA 02453 or faxed to 781-893-4414 to arrive before that time.
- Certification:** The Contractor must be licensed and certified in the State of Massachusetts as an Asbestos Abatement Contractor in accordance with 453 CMR 6.00 and must provide supporting documentation.
- Representative:** The City of Haverhill has designated the Hub Testing Laboratory, Inc. of 95 Beaver Street, Waltham, MA 02453, as Owners Representative. As the Owner's Representative, Hub Testing Laboratory, Inc.; Tel: (781) 893-8330, Fax: (781) 893-4414 has the power to ascertain the progress of the project and to act for the owner in all phases of contract performance.
- Wages:** Prevailing wage rates are located within the bid document. Under regulation, which is effective as of May 7, 1993, every contractor and subcontractor on Approved School Projects must submit weekly payroll records as a condition of receiving payment for their work. 603 CMR 38.03(2)(k) states "Every contractor and subcontractor working under the terms of any contract for construction on an approved school project shall file weekly payroll records with the awarding authority in the form described in M.G.L. c.149's. 27B. The awarding authority shall withhold payment for any construction work performed on an approved school project for so long as the payroll records for the work performed are not filed with the awarding authority.
- Bonds:** A Bid Bond is not required for this project, however a 100% Performance Bond will be required prior to the start of any work.
- Note:** The asbestos removal work is performed as a "controlled" asbestos abatement and shall conform to all State and Federal regulations.

CITY OF HAVERHILL, MA

FORMAL BID

NAME OF BIDDER: _____

ADDRESS: _____

ZIP CODE: _____ TELEPHONE NO.: _____ FAX NO.: _____

BIDDERS FEDERAL or SOCIAL SECURITY IDENTIFICATION NO. _____

TO CITY OF HAVERHILL MASSACHUSETTS

1. The undersigned firm hereby proposes and agrees to furnish and deliver the material and/or services required by AHERA Regulations and the Commonwealth of Massachusetts Asbestos Abatement Specifications at the price set forth thereon.
2. The undersigned submits this bid for furnishing and delivering as shown. The Contractor declares that it's bid is made without collusion with any other person, firm or corporation making any other proposal or who otherwise would make a proposal, and agrees to furnish in strict accordance with the specifications which consist of this bid form and all attached documents and instructions.
3. BID SUBMITTAL - Bids are to be submitted by 3:00 p.m. on Wednesday, August 13, 2008. Bids may be submitted by mail to: 95 Beaver Street Waltham, MA 02453 or by faxing to: Hub Testing Laboratory, Inc. Waltham, MA, at (781) 893-4414, telephone number is (781) 893-8330.
4. CERTIFIED CHECK/BID BOND - No bid bond is required with this proposal.
5. REJECTION OF BIDS - The Awarding Authority reserves the right to reject any or all bids to waive any informalities and to negotiate contract terms with the successful bidder and the right to disregard all non-conforming, non-responsive or conditional bids. If the contract is to be awarded, it will be awarded to the lowest responsible and eligible bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the project.
6. BOND - Any bidder awarded a contract will be required to furnish a bond executed by a surety company licensed to do business within the Commonwealth of Massachusetts. Such bond shall be in the amount of one hundred percent (100%) of the contract price and conditioned upon the faithful performance of such contract.
7. ASBESTOS ABATEMENT SPECIFICATIONS – AHERA Regulation 40CFR, EPA Asbestos NESHAP 40CFR and Massachusetts 453 CMR 6.00.

8. CONFORMANCE WITH FEDERAL, STATE, LOCAL LAWS - All deliveries shall conform in every respect with all applicable laws of the Federal Government, the Commonwealth of Massachusetts and/or the City of Marlborough.
9. DISCRIMINATION - The Contractor in the performance of all work after award and prior to completion of the contract work will not discriminate on grounds of race, color, religion, national origin, age or sex in employment practices or in the selection retention of subcontractors, and in the procurement of materials and rental of equipment. The Owner may cancel, terminate or suspend the contract in whole or in part for any violation of this paragraph.
10. TAXES - Purchases made by the School District are exempt from the payment of Federal and State taxes and any such taxes must not be included in bid prices. Tax exemption certificate, if required, will be furnished upon request.
11. PATENTS - Whenever the Contractor desires to use any design, device, material, method of operation, or process covered by letters patent or copyright, the entire cost thereof, including royalties, will be paid by the Contractor. The Contractor shall be responsible for any liability on the part of the Owner or Industrial Hygiene Consultant, which may result from violations by the Contractor.

PRICE PROPOSAL

The City may select the individual bid that is most advantageous to the City of Haverhill, which may result in one or no contractors being selected to perform the work.

WHITTIER GREENLEAF SCHOOL

1. Construct two semi-permanent containments consisting of a double layer of (6) mil. polyethylene sheeting to allow access to sections of the Steam Line system for maintenance purposes.
2. Line the containment with a third layer of (6) mil. polyethylene sheets for asbestos removal.
3. Remove all the asbestos containing insulation within the containment.
4. Remove all debris on the ground and a minimum of one inch of soil within the containment.
5. Seal the raw edges of the insulation extending through the containment with "wet-wrap" and seal all openings from the containment.
6. Remove Asbestos Containing Floor Tile in the office, mastic not included

The work shall be performed according with the specification for an all inclusive total price of:

Area I, Complete _____ \$ _____
Written in Words

Area II, Complete _____ \$ _____
Written in Words

Office, Removal of 20' x 40' of Asbestos Floor Tile (NO Mastic)
in full containment with Negative Air Pressure

Written in Words

TOTAL PRICE: \$ _____

Area B

office

Area A

WHITTIER MIDDLE SCHOOL - EXISTING FLOOR PLAN

A1.01

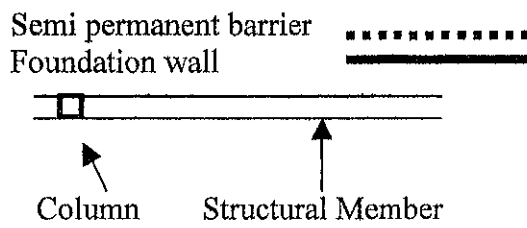
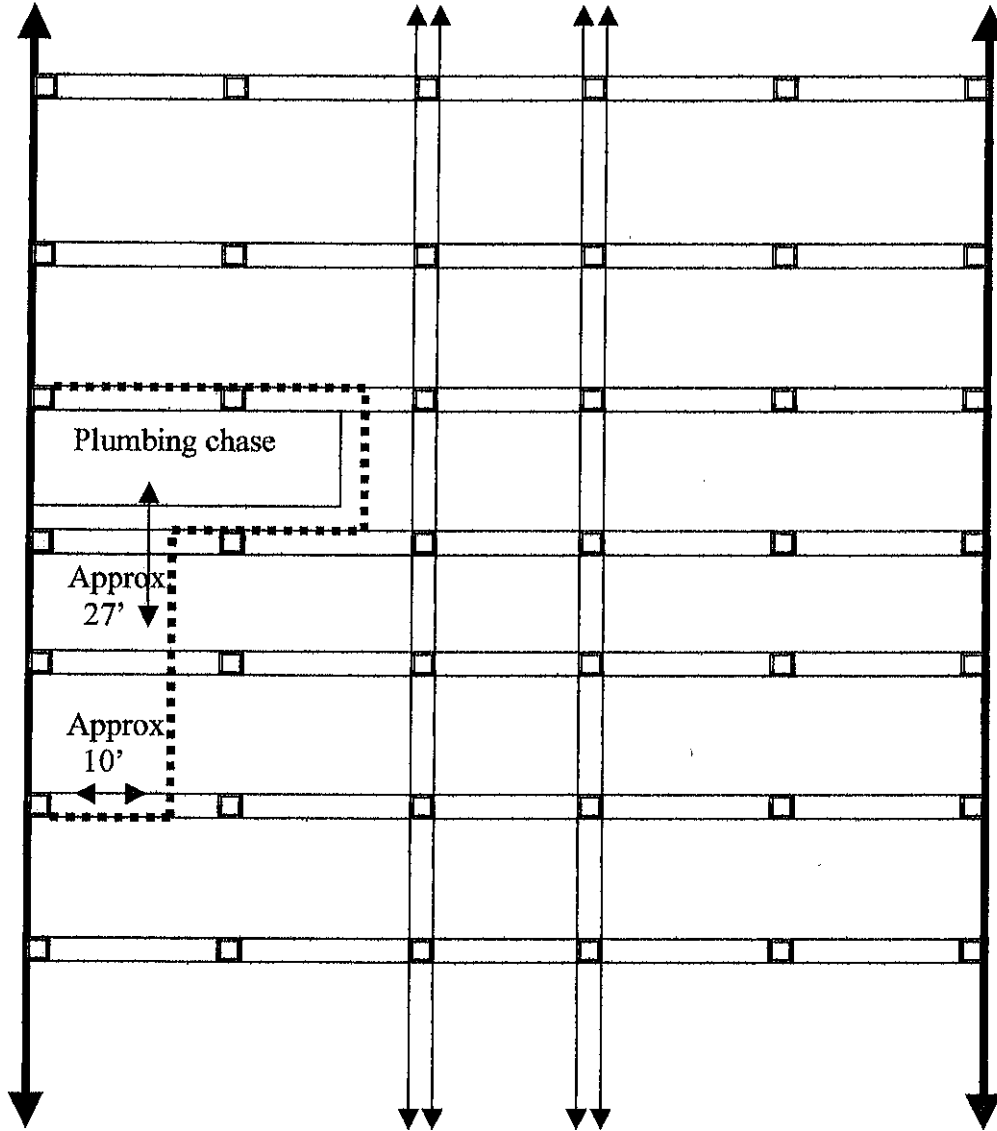
EXISTING GROUND FLOOR PLAN

WHITTIER MIDDLE SCHOOL

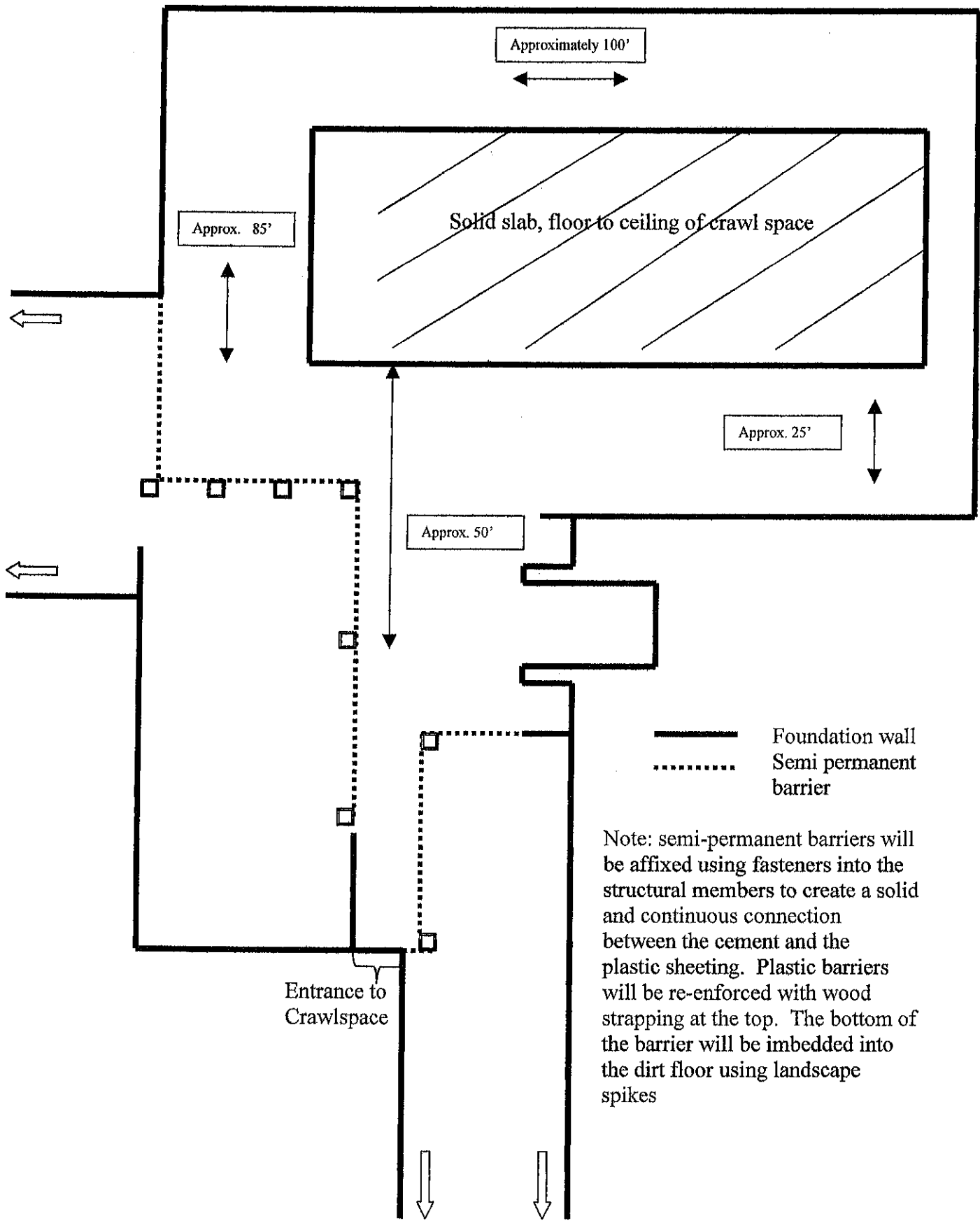
256 CONCORD STREET - HAVERHILL, MASS.

ARCADD, INC. ARCHITECTURE, PLANNING, ENGINEERING, INTERIOR DESIGN, ENVIRONMENTAL DESIGN, OFFICE BUILDINGS, 1000 WASHINGTON STREET, HAVERHILL, MASS. 01830-1000 TEL: 978.375.1000 FAX: 978.375.1001 WWW.ARCADD.COM

Height in crawlspace approximately 5'
Height in plumbing chase approximately 15'



Area A

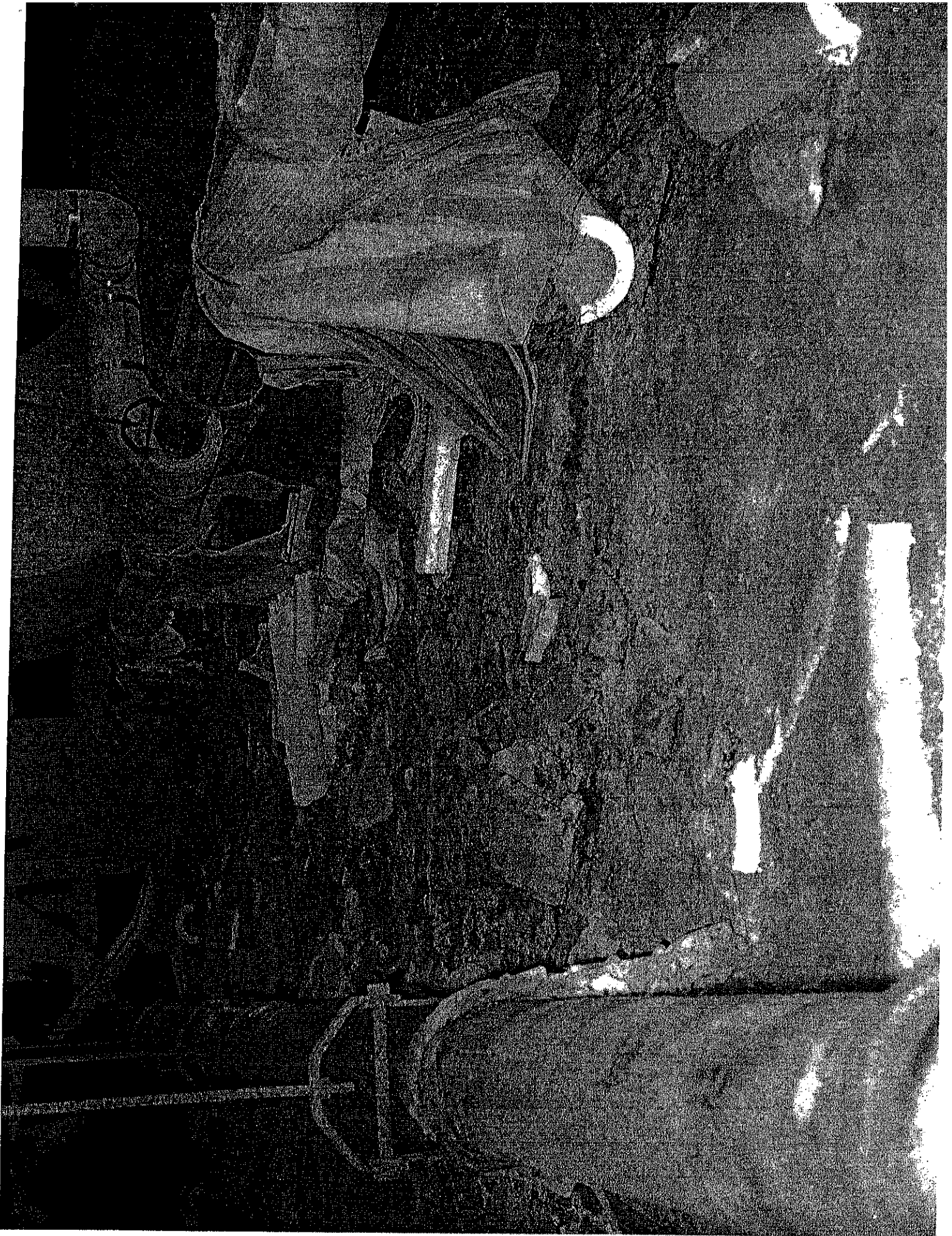


Area B

- Foundation wall
- Semi permanent barrier

Note: semi-permanent barriers will be affixed using fasteners into the structural members to create a solid and continuous connection between the cement and the plastic sheeting. Plastic barriers will be re-enforced with wood strapping at the top. The bottom of the barrier will be imbedded into the dirt floor using landscape spikes





SECTION 02082

ASBESTOS ABATEMENT

Bids for work under this section shall be for the complete work and shall be filed either by mail to: 95 Beaver Street Waltham, MA 02453 or by fax #781-893-4414. A copy of the Price Proposal shall be directed to Hub Testing Laboratory, Inc., not later than 3:00 p.m., Wednesday, August 13, 2008.

PART 1 - GENERAL

GENERAL CONDITIONS

From time to time the crawl spaces of the Whittier Greenleaf Middle School must be accessed to perform certain plumbing maintenance services to the piping in the crawlspace under the school. In order to perform these services the trades persons must have an asbestos free work area.

To this end the Asbestos Removal Contractor is required to build two semi-permanent polyethylene containments, remove the asbestos insulation within the containment and one inch of soil within the containment leaving the containment intact and in place. In addition the Contractor will remove Vinyl Asbestos Floor Tile (VAT) in a small office. It is the responsibility of the Contractor to attend the walk through, understand the project to determine and verify exact quantities for purpose of bid and costing.

NOTE:

See sketches and photographs of the general crawlspace areas.

Final air clearance will require analysis by Transmission Electron Microscopy (TEM) therefore will take approximately two days for analytical results.

BID DUE:

Mailed or Faxed copy of bid due by: 3:00 p.m., Wednesday, August 13, 2008

INDEX

PART 1 – PROJECT

- 1.01 SUMMARY OF WORK
 - 1.01.1 BARRIER
- 1.02 SUMMARY OF TASKS
- 1.03 AUTHORITY TO STOP WORK
- 1.04 NOTIFICATIONS, PERMITS, WARNING SIGNS, LABELS, AND POSTERS
- 1.05 SUBMITTALS
 - 1.05.1 PRE-START MEETING SUBMITTALS
- 1.06 RESPIRATORY PROTECTION
 - 1.06.1 GENERAL RESPIRATORY PROTECTION PROGRAM
 - 1.06.2 RESPIRATION FIT TEST
 - 1.06.3 RESPIRATION FIT CHECK
- 1.07 MEDICAL EXAMINATIONS
 - 1.07.1 MEDICAL WRITTEN OPINION
- 1.08 DECONTAMINATION FACILITIES
 - 1.08.1 DESCRIPTION
 - 1.08.2 GENERAL REGULATIONS

PART 2 – EXECUTION

- 2.01 PRE-ASBESTOS ABATEMENT PREPARATIONS
- 2.02 CONSTRUCTION OF CONTAINMENT
- 2.03 ASBESTOS REMOVAL
- 2.04 REMOVAL PRACTICES

PART 3 – REMOVAL OF VINYL ASBESTOS FLOOR TILE (VAT)

- 3.1 GENERAL
- 3.2 PRE-CLEANING FIXED OBJECTS
 - 3.2.1 PRE-CLEANING SURFACES IN THE REGULATED AREA
- 3.3 CONTAINMENT BARRIERS & COVERINGS FOR THE REGULATED AREA
 - 3.3.1 GENERAL
 - 3.3.2 PREPARATION PRIOR TO SEALING OFF
 - 3.3.3 CONTROLLING ACCESS TO REGULATED AREA
 - 3.3.4 CRITICAL BARRIERS
 - 3.3.5 EXTENSION OF THE REGULATED AREA
- 3.4 FLOOR TILE REMOVAL
 - 3.4.1 GENERAL
 - 3.4.2 REMOVAL OF VINYL/ASPHALT ASBESTOS FLOOR TILE

PART 4 - MONITORING, TESTING, AND INSPECTION

- 4.01 FINAL INSPECTION AND TESTING

PART 1 - PROJECT

1.01 SUMMARY OF WORK

- A. The Contractor shall provide service, labor, materials, equipment, insurance and supervision to build two semi-permanent polyethylene containments and for the proper removal of asbestos containing materials, soil, and decontamination in the crawlspace of the Whittier Greenleaf School, Haverhill, MA. In addition the Contractor will remove approximately 800 square feet of Vinyl Asbestos Floor Tile (VAT) in accordance with these specifications.
1. All work shall be performed in accordance with all OSHA, EPA, DEP, NESHAP, NIOSH, DLWD and any local regulations governing the removal of asbestos containing materials.
 2. The Contractor is responsible for protection of any non-ACM materials and coverings within a work area from contamination unless designated otherwise for removal and disposal.
 3. It is the contractors responsibility to fully clean all surfaces in each and every work area, The Contractor will apply an encapsulant as a "lock down" agent to the abated surfaces.
- B. This Contract is being performed as a major abatement project. All work shall be performed in close coordination with the City's Representative and the School Department.
- C. All Asbestos Abatement works must be notified to Regulatory Agencies and scheduled well in advance of the start up date. Delays by the Asbestos Abatement Contractor will have significant impact on the school schedule.

1.01.1 BARRIER

- A. The Semi-Permanent Barriers shall be constructed of two layers of (6) Mil. fire resistant polyethylene sheeting formed over 2"x4" wood (or metal) studs. The Barriers shall be firmly secured in place from the soil base to the concrete slab above.
- B. Area A – Area shall be accessed through a "man-hole" in the utility room and shall consist of the adjoining pipe chase and a portion of the crawl space under the classroom(s) (See Sketch A & photographs.)

Area A contains approximately 500 sq. feet of contaminated soil and approximately 150 linear feet of asbestos containing insulation (TSI) of which a portion has detached and fallen on the soil.

concrete slab in the center of the area and the removal area surrounds this. (See Sketch B & photographs.)

The Semi-Permanent Barrier is approximately 100 linear feet and the TSI is approximately 2500 linear feet with much dropped to the soil. The contaminated soil is the total area shown in sketch B.

1.02 SUMMARY OF TASKS

- A This section covers the furnishing of all labor, materials, facilities, equipment, services, employee training and testing, permits and agreements necessary to perform the work required for asbestos removal in accordance with these specifications, EPA, OSHA, and any other applicable federal, state and local governments regulations. Whenever there is a conflict or overlap of the above references the most stringent provisions are applicable.
- B. Description of Work:
Perform the work and provide the services as follows:
1. Pre-abatement inspection.
 2. Work area preparation.
 3. Trained workers with respiratory protection and medical examination.
 4. Packing material, packaging, labeling, transporting and disposal of contaminated material, including waste shipment record.
 5. Decontamination of work area for final inspection and testing.
 6. Provide access, support and protection to all authorized visitors and inspectors.
 7. Construction of two Semi-permanent containments, left in place.

1.03 AUTHORITY TO STOP WORK

- A. The Owner and/or Owner Retained Industrial Hygienist (I.H.) has the authority to stop the abatement work whenever the work conditions are considered a Safety Hazard or at any time the I.H. determines either personally or through the Owner's Representative that conditions are not within the specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and steps have been taken to the satisfaction of the Owner. Standby time required to resolve violations shall be at the Asbestos Contractor's expense.

1.04 NOTIFICATIONS, PERMITS, WARNING SIGNS, LABELS AND POSTERS

- A. Secure all the permits required for the work, including disposal of asbestos in an approved landfill prior to the start of work.

B. Notification:

1. Provide written notification to the EPA at least 10 days in advance of the work start date. This is done by means of the Massachusetts Notification.
2. Provide Massachusetts DEP and Department of Labor and Workforce Development written notification at least 10 days in advance to the start of work.
3. Provide written notification to City Agencies such as fire, police, engineering, public health or others as required

C. Warning Signs: Post the required signage around the workplace and at every point of potential entry from outside, showing the standard wording from OSHA 1926.58. Warning signs shall be bright color so they will be easily noticeable. The size of the sign and the size of the lettering shall be no less than the OSHA 1926.58 and 1910.145 requirements.

D. Labels: Provide the required OSHA, EPA and DOT labels for all plastic bags and all drums utilized to transport contaminated material to the landfill.

E. At the job site provide any other signs, labels, warnings and posted instructions that are necessary to protect, inform and warn people of the hazard from asbestos exposure. Post in a prominent and convenient place for the worker a copy of the latest applicable regulations from OSHA and EPA, and State regulations including OSHA 29 CFR 1926.1101, 1910.1001 and 40 CFR 1, Subpart M.

1.05 SUBMITTALS

1.05.1 PRE-START MEETING SUBMITTALS

Submit to the owner-retained I.H. a minimum of 10 days prior to the start of this project the following for review and approval. Meeting this requirement is a prerequisite for the start for this project.

- A. Submit a detailed work schedule for the entire project reflecting contract documents and the phasing/schedule requirements.
- B. Submit a staff organization chart showing all personnel who will be working on the project and their capacity/function. Provide their qualifications, training, accreditations, and licenses, as appropriate. Provide a copy of the "Certificate of Worker's Acknowledgment" and the "Affidavit of Medical Surveillance and Respiratory Protection: for each

person

- C. Submit Standard Operating Procedures developed specifically for this project, incorporating the requirement of the specifications.
- D. Submit the specifics of the materials and equipment to be used for this project with brand names, model numbers, performance characteristics, pictures/diagrams, and number available for the following:
 - 1. Negative air machines, HEPA vacuums, calibration devices, pressure differential monitoring device and emergency power system.
 - 2. Waste water filtration system, shower system, containment barriers.
 - 3. Hand held sprayers, airless sprayers and fire extinguishers.
 - 4. Respirator, protective clothing, personal protective equipment.
 - 5. Fire safety equipment to be used in the regulated area.
- E. Submit the name, location, and phone number of the approved landfill; proof/verification the landfill is approved for ACM disposal; the type of vehicle to be used for transportation; and name, address, and phone number of subcontractor, if used.
- F. Submit copies of the required notifications and arrangements made with regulatory agencies having regulatory jurisdiction and the specific contingency/emergency arrangements made with local health, fire, ambulance, hospital authorities and any other notifications/arrangements.
- G. Personnel to be used for analysis of air and/or bulk samples and verification of the laboratory. Air monitoring must be done in accordance with OSHA 29 CFR 1926.1101 (f).
- H. Submit information on personnel: Copies of certificate, accreditations, and licenses.
 - 1. Supervisor(s): Number; names; social security numbers.
 - 2. Workers: Numbers; names; social security numbers; years of abatement experience; certificates, licenses, accreditations; training courses in asbestos abatement and respiratory protection; medical opinion; current respirator fit test.
- I. Submit copies of State license for asbestos abatement; copy of insurance.

1.06 RESPIRATORY PROTECTION

1.06.1 GENERAL – RESPIRATORY PROTECTION PROGRAM

The Contractor shall develop and implement a Respiratory Protection Program (RPP) which is in compliance with the January 8, 1998 OSHA requirements found at 29 CFR 1926.1101 and 29 CFR 1910.132;134. All respirators used must be NIOSH approved for asbestos abatement activities. The written respiratory protection shall, at a minimum, contain the basic requirement found at 29 CFR 1910.134 (1) (i – ix) – Respiratory Protection Program.

1.06.2 RESPIRATOR FIT TEST

All personnel wearing respirators shall have a current qualitative/quantitative fit test which was conducted in accordance with 29 CFR 1910.134 (f) and Appendix A. Quantitative fit tests shall be done for PAPR's which have been put into a failure mode.

1.06.3 RESPIRATOR FIT CHECK

The Contractor shall assure that the positive/negative fit check is done each time the respirator is donned by an employee. Headcoverings must cover respirator headstraps. Any situation that prevents an effective facepiece to face seal as evidenced by failure of a fit check shall preclude that person from wearing a respirator until resolution of the problem.

1.07 MEDICAL EXAMINATIONS

Medical examinations meeting the requirement of 29 CFR 1926.1102 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. A current physician's written opinion as required by 29 CFR 1926.1101 (m) (4) shall be provided for each person and shall include in the opinion the person has been evaluated for working in an asbestos environment, wearing a respirator and is capable of performing the work.

1.07.1 MEDICAL WRITTEN OPINION

No employee shall be allowed to wear a respirator unless a physician has determined they are capable of doing so and has issued a current written opinion for that person.

1.08 DECONTAMINATION FACILITIES

1.08.1 DESCRIPTION

Provide the regulated are with personnel (PDF) and waste/equipment decontamination facilities (W/EDF). Ensure that the PDF are the only means of

ingress and egress to the regulated area and that all equipment, bagged waste, and other material exit the regulated area only through the W/EDF.

1.08.2 GENERAL REQUIREMENTS

All personnel entering or exiting a regulated area must go through the PDF and shall follow the requirements at 29 CFR 1926.1101 (j) (1) and these specifications. All Waste, equipment and contaminated materials must exit the regulated area through the W/EDF and be contained in accordance with these specifications. Walls and ceilings of the PDF and W/EDF must be constructed of a minimum of 3 layers of 6 mil opaque fire retardant polyethylene sheeting and be securely attached to existing building components and/or an adequate temporary framework. A minimum of 3 layers of 6 mil poly shall be used to cover the floor under the PDF and W/EDF units. Construct doors so that they overlap and secure to adjacent surfaces.

PART 2 - EXECUTION

2.01 PRE-ASBESTOS ABATEMENT PREPARATIONS

A. Prior to any abatement work in the area:

1. Seal off the entire area to any one other than trained personnel and authorized visitors.
2. Erect signs around the area in accordance with EPA, OSHA, and this specification. Unauthorized entry during abatement process shall be provided by twenty-four hour security. Maintain a log of all people entering and exiting the work place.

B. Isolation of the work area:

1. Construct two semi-permanent containments. (See section 2.03 Construction of Containment)
2. Seal the insides of containments with one layer of six-mil plastic sheet.
2. Seal off all duct openings, doors, windows, fan coil units.

2.02 CONSTRUCTION OF CONTAINMENT

The construction of the semi-permanent barrier shall be wood frame with six-mil polyethylene sheeting extending from soil floor to the concrete slab above. The frame must be continuous, that is there shall be no space gaps in the header or

footer and the ends shall have full-length wood studs.

The wood frame may be fastened to the concrete slab by means of power driven nails (Hilti fasteners) and spiked into the soil floor. See Sketch for location.

Vertical wood stiffeners shall be constructed on 24" center or closer as needed to support the barrier, foam may be used to fill small voids and to make an airtight barrier.

Two layers of six-mil plastic sheeting shall be permanently attached, one on the outside and one on the inside of the containment frame by cinching the layers around the header and footer. The entire assembly shall be left in place after air clearance is obtained and after asbestos is removed. Polyethylene sheeting utilized for the barrier shall be opaque white or black in color, 6 mil fire retardant poly.

An additional layer of 6-mil polyethylene sheeting shall be affixed to the inside of the barrier to be used as an asbestos shield. This layer shall be removed as asbestos waste after air clearance has been achieved.

2.03 ASBESTOS REMOVAL

A. Method of Removal - Major Abatement for each area

1. Post Asbestos Warning Signs in all areas of removal.
2. Construct plastic enclosures according to Asbestos Abatement Specifications and 453 CMR 6.14. Designate emergency exits.
3. Set up removal zones, under 0.02 inches of water negative air pressure, as indicated in and required by regulations.

Before any disturbance of any asbestos material, this shall be demonstrated to the Asbestos Monitor by use of a pressure differential meter/manometer as required by OSHA 29 CFR.1101 (e) (5) (i). The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02 inches of water column for the length of the project.

The removal zone should consist of:

- A. Clean room
- B. Airlocks
- C. Showers
- D. Crawlspace work area

4. Cover all electrical panels, junction boxes, fire alarm equipment, controls, etc. in removal area. Cover and seal with plastic and tape.
5. Remove all moveable items from area. Cover all non-moveable items and equipment with plastic sheeting taped securely for seal.
6. Remove all HVAC system filters after asbestos removal is completed and treat as contaminated material. At end of job provide and install new filters. Seal all HVAC openings into areas using 2 layers of 6 mil plastic, i.e. critical barriers.
7. Barrier all windows, doors, pipe sleeves, access panels, etc. not being used for entry and exit. Attach asbestos warning signs. Use plywood or equivalent, as necessary to meet critical barrier requirements.
8. After all preparations have been made, approval for removal will be given by the Owner obtained Industrial Hygienist/I.H. firm. Approval is required prior to the commencement of work within the work area containment.
9. The Contractor shall remove asbestos completely using appropriate tools, i.e., nylon brushes, scrapers, as necessary so that no visible residue remains. Complete removal by wiping down with amended water. All asbestos is to be kept sufficiently wetted with amended water throughout the removal process; no dry removal is permitted.
10. Double bag material, pack and seal for disposal according to Specifications. Bagged materials must be sufficiently wetted.
11. Pick-up and package pieces of fallen asbestos materials and then remove and package minimum of 1" of contaminated soil. Soil may not be raked as this imbeds asbestos waste. Dispose of all material as asbestos waste. See section 2.04 of the Removal Practice for clean-up procedures and final clearance monitoring.

2.04 REMOVAL PRACTICES

- A. After the removal of asbestos has been completed and before removal of the inner ply sheet, areas shall be thoroughly wet cleaned and/or vacuumed with HEPA filtered vacuum.
- B. Waste containers shall be packed, cleaned, labeled and removed from the work area prior to final clean up and monitoring.
- C. All equipment not used in final cleanup and monitoring shall be

decontaminated and removed prior to final cleanup and monitoring.

- D. After first cleanup, I.H. shall visually examine work area for gross contamination. A second wet cleaning and/or HEPA vacuuming shall be performed. If no visible contamination is observed, the Contractor shall proceed with misting and/or encapsulation steps.
1. Misting – Lightly mist air with amended water to precipitate airborne fibers.
 2. Allow sufficient time before next step to allow fibers to settle and for the work area to dry.
 3. Fine cleaning must take place after misting and/or encapsulating procedures.
 4. Inner layer of plastic is taken down and disposed of as asbestos waste when air monitoring results as determined by NIOSH 7400 Method indicate level is less than 0.01 f/cc.
 5. The clean level test (final test) shall be a high volume (2880 liters). The clean level shall be less than 70 structures per millimeter squared (MM²).
 - a. In accordance with AHERA transmission electron microscopy (TEM) sampling and analysis shall be employed for the work area to conform to regulations.
 - b. All sampling shall be performed using aggressive methods.
 6. At the discretion of the Owner-retained I.H., wipe samples may be collected for analysis by Polarized Light Microscopy if the presence of asbestos fibers on various surfaces is suspected. A complete absence of asbestos fibers must be reported in these samples.
 7. Following the successful inspection and final testing as specified herein, all plastic sheeting, tapes, and disposable contaminated equipment shall also be disposed of as contaminated waste. All reusable contaminated equipment shall be thoroughly decontaminated through wet cleaning.
 8. The semi-perm barrier shall be wiped down, repaired as needed and left in place for use by others.

PART 3 – REMOVAL OF VINYL ASBESTOSS FLOOR TILE (VAT)

- 3.1
- A. Remove vinyl-asbestos floor tile (VAT), as noted and in accordance with the specifications and with local DLWD, OSHA, DEP and EPA regulations
 - B. Where VAT is noted to be removed and such VAT is in a work area, remove VAT so that it does not become friable during the removal. After removal of VAT, proceed with decontamination and final inspection and testing of the work area as specific elsewhere in this section.
 - C. As VAT is the only ACM to be removed in this office area, the area shall be secured against entry by any unauthorized or untrained person throughout the work. After removal of VAT, the Asbestos Monitor shall perform a final inspection and testing of the room and notify the contractor when results are satisfactory. When the area is found acceptable to the Asbestos Monitor, and after Final Clearance, the warning signs and temporary barricades will be removed and the room will be released as decontaminated.
 - D. Removal of VAT shall be performed with wet methods and hand scrapers. Heating or the application of dry ice may be used also. If chemical solvents are to be used in the removal of VAT or mastic, they shall be of a nature that does not produce odor or noxious fumes that will impact on occupants or other areas of the building. The use of chemical remover requires prior approval of the IH firm. Power tools, grinders or other machines which may produce dust during removal of VAT and mastic are not allowed.

3.2 PRE-CLEANING FIXED OBJECTS

- A. Pre-clean all fixed objects in the regulated area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. After precleaning, enclose fixed objects with 2 layers of 6-mil poly and seal securely in place with duct tape. Object (e.g., permanent fixtures, shelves, and electronic equipment).

3.2.1 PRE-CLEANING SURFACES IN THE REGULATED AREA

- A. Pre-clean all surfaces in the regulated area using HEPA filtered vacuums and/or wet cleaning methods as appropriate. Do not use any methods that would raise dust such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not disturb asbestos-containing materials during this pre-cleaning phase

equipped with HEPA filters. Do not disturb asbestos-containing materials during this pre-cleaning phase

3.3 CONTAINMENT BARRIERS & COVERINGS FOR THE REGULATED AREA

3.3.1 GENERAL

- A. Seal off any openings at the perimeter of the regulated area with critical barriers to completely isolate the regulated area and to contain all airborne asbestos contamination created by the abatement activities.

3.3.2 PREPARATION PRIOR TO SEALING OFF

- A. Place all infra-red machines, materials, equipment and supplies necessary to isolate the regulated area inside the regulated area. Remove all movable material/equipment as described above and secure all unmovable material/equipment as described above. Properly secured material/equipment shall be considered to be outside the regulated area.

3.3.3 CONTROLLING ACCESS TO THE REGULATED AREA

- A. Access to the regulated area shall be permitted only by the Contractor. All other means of access shall be closed off by proper sealing and DANGER signs posted on the clean side of the regulated area where it is adjacent to or within view of any occupiable area. An opaque visual barrier of at least 4-mil ply shall be provided so that the abatement work is not visible to any building occupants. Provide an appropriate number of OSHA DANGER signs for each visual and physical barrier.

3.3.4 CRITICAL BARRIERS

- A. The regulated area must be completely separated from the adjacent areas, and the outside by at least 2 layers of 6-mil fire retardant poly and duct tape/spray adhesive. Individually seal all supply and exhaust ventilation openings, lighting fixtures, clocks, doorways, windows, convectors, speakers, and other openings into the regulated area with 2 layers of 6-mil fire retardant poly, and taped securely in place with duct tape/spray adhesive. Critical barriers must remain in place until all work and clearances have been completed.

3.3.5 EXTENSION OF THE REGULATED AREA

- A. If the regulated area barrier is breached in any manner that could allow the passage of asbestos fibers or debris, the Contractor shall immediately stop work, continue wetting, and proceed to extend the regulated area to enclose the affected area as per procedures described in this specification.

3.4 FLOOR TILE REMOVAL

3.4.1 GENERAL

- A. All applicable OSHA requirements shall be met during floor tile removal operations.

3.4.2 REMOVAL OF VINYL/ASHPHALT ASBESTOS FLOOR TILE

- A. Floor tile shall be removed intact, as much as possible. Dust production by any means or devices is not allowed.
- B. Mechanical chipping and/or sanding is not allowed.
- C. HEPA vacuums shall be used to clean floors after abatement.

PART 4

4.0 MONITORING, TESTING AND INSPECTION:

- A. Performance and execution of the work shall be closely and continuously monitored by the Owner retained Industrial Hygienist/I.H. Consultant and their technicians.

4.1 FINAL INSPECTION AND TESTING

- A. After thorough cleaning, the Contractor shall determine that the work space is ready for final testing and notify the Project Monitor. The Project Monitor and Contractor shall jointly inspect the areas and when they are in agreement that the areas are clean, the final air clearance testing shall be performed.
- B. Final testing shall take place under active agitation of the air in the work space with air filtration units (HEPA) and fans running.
- C. Final air clearance sample analyses shall be performed by Trans Electron Microscopy (TEM) and will require a minimum of two days.

— END OF SECTION —