

SECTION 02 0800

ASBESTOS ABATEMENT

PART I - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS, which are hereby made a part of this section of the specifications.
- B. The Contractor must be familiar with all other Divisions and Sections of the Specification which affect the work of this Section.

1.02 DEFINITIONS

- A. The following definitions shall be applicable to this Section:

“Site”: Refers Clark Street Elementary School located in Worcester, Massachusetts as described by the Contract Documents and Drawings.

“Owner”: Refers to Worcester Public Schools and their designated, authorized personnel.

“Consultant”: Refers to Atlas Technical Consultants, LLC (ATLAS) 73 William Franks Drive, West Springfield, Massachusetts and their designated, authorized personnel.

“General Contractor”: Refers to the Contractor who has been awarded the overall contract for renovation work outlined by the Contract Documents.

“Asbestos Abatement Contractor”: Refers to the Contractor who is performing asbestos abatement work as outlined by this Section.

“Asbestos Project Designer”: The MADLS certified Asbestos Project Designer for this project is Mr. Edward Kolodziej (#AD074321), ATLAS Technical Consultant, LLC.

1.03 GENERAL REQUIREMENTS/QUALIFICATIONS

- A. All Asbestos Abatement work referenced herein shall be performed by a Massachusetts licensed Asbestos Abatement Contractor in accordance with federal Asbestos Hazard Emergency Response Act (AHERA) 40 CFR 763, Massachusetts Department of Labor Standards (MADLS) 454 CMR 28.00 and Department of Environmental Protection (MADEP) CMR 7.15 Regulations.
- B. Qualifications of Asbestos Abatement Contractor
 1. Asbestos Abatement Contractor performing the abatement work of this section (“Asbestos Abatement Contractor”) shall be an Asbestos Abatement Contractor licensed to perform asbestos operations in the State of Massachusetts. Asbestos Abatement Contractor shall submit license number and proof of licensure.
 2. The Asbestos Abatement Contractor shall also provide the project name, contact person and phone number of three (3) projects which were successfully completed of similar size and scope within the last two (2) years. Each project shall have been completed in good standing and the work performed by the Asbestos Abatement

Contractor for each project resulted in no work violations/citations, contract delays, contract extensions/disputes or litigation. Failure to provide this information and/or meet the approval of these qualifications by the Owner may result in rejection of the Asbestos Abatement Contractor.

3. The Owner or Consultant shall also reserve the right to research and utilize other information received from any other projects completed by the Asbestos Abatement Contractor not provided under 1.03 B (2) above, regardless of the date completed, location or circumstances resulting from the outcome of their work. The Owner shall reserve their right to reject the Asbestos Abatement Contractor based upon this review, for any reason, if found to be in the best interest of the Owner.

NOTE: The Asbestos Abatement Contractor shall not be authorized to begin work until all credentials outlined above are reviewed and approved by the Consultant.

1.04 DESCRIPTION OF WORK

- A. Work: This section details all areas where asbestos abatement work is to be performed and lists areas requiring special protection during the abatement work. The Asbestos Abatement Contractor shall furnish all labor, materials, services, training, insurance, and equipment as needed to complete removal of asbestos-containing and asbestos-contaminated materials located as indicated below. The Asbestos Abatement Contractor shall follow all Federal, State and local ordinances, regulations and rules pertaining to asbestos, including its abatement, storage, transportation and disposal.
- B. The Asbestos Abatement Contractor shall be responsible for verifying all quantity estimates in preparation of their bids, including the location and conditions of all asbestos-containing materials to be abated under this contract. No additional compensation and/or contract time shall be granted to the Asbestos Abatement Contractor for failure to perform this requirement and no compensation shall be granted for variations in the quantities presented herein.
- C. The following Scope of Work and Requirements shall be applicable for asbestos abatement work at the site:
 1. All Asbestos Abatement work shall take place in accordance with the provisions outlined herein as well as current local, state and federal regulations. Specifically, MADEP 310 CMR 7.15 and MADLS 454 CMR 28.00 Regulations shall be adhered to for all work. No additional compensation shall be granted to the Asbestos Abatement Contractor for compliance with applicable laws when performing the abatement work at the site. This shall include any regulatory requirements that mandate additional or more restrictive containment and abatement procedures than what has been presented herein.
 2. The Asbestos Abatement Contractor shall coordinate with the Consultant and Owner as to the locations of areas to be abated in accordance with the Scope of Work outlined herein and the Drawings.
 3. The Asbestos Abatement Contractor shall be responsible for all demolition work required in order to access all asbestos materials for abatement. All demolition debris shall be disposed of as asbestos waste, unless otherwise determined by the Consultant.

4. Demolition or disconnection of non-asbestos material or infrastructure to gain access to asbestos material to be abated or removed, shall be repaired or replaced to match the adjacent existing conditions by the General Contractor at no additional cost to the Owner.
5. Coordination shall exist between the abatement under this Section and the disconnection of existing electrical, plumbing or fire suppression equipment with the buildings by the General Contractor.
6. All removal procedures shall take place under full containment and a three-stage decontamination unit under negative pressure.
7. With regards to the variance from requirements on polyethylene sheeting on “impervious wall” surfaces, the Asbestos Abatement Contractor shall be required to adhere to all requirements outlined by MADLS regulations governing work area set-up for asbestos abatement. The Asbestos Abatement Contractor shall take full responsibility including all costs associated with approval and/or denial of such actions (i.e. nonuse of polyethylene) if determined to be non-compliant by the Consultant and/or a state or federal agency. If denied or discontinued by said parties; the Asbestos Abatement Contractor shall proceed with all decontamination/clean-up required and installation of polyethylene sheeting on such surfaces at no additional cost to the Owner.
8. The following requirements shall be applicable for the abatement of pipe & fitting insulation and contaminated soil in the tunnel/crawlspace.
 - a. Contractor’s competent person shall evaluate the space to determine if the space requires a permit. Contractor shall be responsible for all aspects and costs if the space is deemed to be a permit required confined space.
 - b. The rocks and debris on the soil shall be cleaned /removed and disposed of as asbestos contaminated waste material. The contaminated soil in the crawlspace shall be cleaned to a depth of two inches (2 inches) or to when there is no visible contamination or debris after the pipe insulation is removed. The Abatement Contractor shall not be compensated for removing soil at depth greater than two inches (2 inches) in order to pass visual inspection criteria.
 - c. The Contractor shall place poly over the soil prior to removing the pipe insulation.
 - d. Glovebag Removal Requirements
 - i. Perform Glovebag removals in accordance with OSHA 1926.1101 and Massachusetts DLS regulations. At a minimum, install critical barriers. Exclude all persons except those persons directly involved in the glovebag operation from the work area. Utilize physical barriers to limit access to the work area for the duration of the glovebag operation until final clearance is achieved. Remove moveable objects from the work area. Cover non-moveable objects remaining in the work area with 6-mil polyethylene sheeting securely taped to prevent contamination. Thoroughly clean objects that have already been contaminated with a HEPA filtered vacuum or wet wipe before they are removed from the work area or covered in place.
 - ii. Only use glovebags on surfaces which do not exceed 150 degrees F unless glovebags are designed to withstand higher temperatures. Install glovebags to completely cover the pipe or other structure where asbestos work is to be done. Smoke test glovebags for leaks and any leaks sealed prior to removals. Wrap and seal loose or friable ACM adjacent to the Glovebag operation or otherwise rendered intact prior to installation with two layers of 6-mil polyethylene sheeting.

- iii. A minimum of 2 workers per glovebag is required. Thoroughly wet ACM in the glovebag before, during and following removal. Apply the wetting agent with an airless sprayer through the pre-cut port provided in most glovebags or through a small hole in the bag. Thoroughly clean and wet wipe the pipe or other structure from which the asbestos has been removed after removal of the ACM with a wetting agent until no traces of ACM can be seen. Remove asbestos fitting insulation on fiberglass insulated with a minimum of 6" of fiberglass insulation on each side.
 - iv. Collapse the glovebag when the asbestos removal and encapsulation have been completed, with the use of a HEPA vacuum in order to remove any air in the bag that may contain asbestos fibers. After the air has been removed from the bag, squeeze the bag tightly (as close to the top as possible), twist, and seal with duct tape, to keep the asbestos materials safely in the bottom of the bag. The HEPA vacuum may then be removed from the bottom of the bag, the hole sealed, and the glovebag removed from the work area and properly disposed.
 - v. Workers using glovebags shall use disposable full body protective clothing and at a minimum, a half-faced air purifying respirator. Establish a central shower and clean-up facility on the site. At the end of the glovebag work operation, remove the protective suit by turning inside out and proceed directly to the shower and clean-up facility.
 - e. Areas within the tunnel that are inaccessible shall be sealed with a fire retardant hard barrier.
 - f. The asbestos abatement contractor shall include the following tunnel areas in one negative pressure containment:
 - i. Containment 1
 - Multi-Purpose Room to Classroom 13
 - ii. Containment 2
 - Conference Room to Classroom 15
 - iii. Containment 3
 - Gym
 - iv. Containment 4
 - Teachers Rm. to Nurse
 - v. Containment 5
 - Classroom 10 to Classroom 9
 - vi. Containment 6
 - Classroom 6 by Hall
 - vii. Containment 7
 - Classroom 6 to Classroom 3
 - viii. Containment 8
 - Hall (Classroom 3 & Storage) to Receiving (Custodial Office)
 - ix. Containment 9
 - Kindergarten 1 & 2
9. Refer to **Attachment A** (Table 1.0) for a summary of materials that require abatement at the site. Refer to Drawings for locations of the work and coordinate all abatement with the General Contractor.

1.05 SUBMITTALS

- A. In addition to items required by other sections of the Project Manual, the following submittals are required for review and approval by the Consultant on/or before the Pre- Construction Meeting:
 1. Copy of Massachusetts MADLS Asbestos Abatement Contractor's License
 2. Copies of all asbestos notifications

3. Chain-Of-Command list of all personnel on-site and emergency contact person(s)
 4. Work plan which dictates all removal procedures to be implemented and projected schedule of completion.
 5. Proposed waste hauler, waste disposal site and a copy of the Waste Shipment Record to be used for disposal of the ACM.
- B. In addition to the items required by other sections of the Project Manual, the following submittals are required for final payment
1. Copy of Waste Shipment Records for disposal of the ACM.

1.06 CODES AND STANDARDS

- A. All work shall conform to the standards set by applicable Federal, State and local laws, regulations, ordinances, and guidelines in such form in which they exist at the time of the work on the contract, and as may be required by subsequent regulations. In addition to any detailed requirements of the Specification, the Asbestos Abatement Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storing of asbestos waste material. This includes all applicable OSHA regulations.
- B. All regulations and other governing agencies in their most current version are applicable throughout this project. Where there is a conflict between this Specification and the cited State, Federal, or local regulations, the more restrictive or stringent requirements shall prevail. This Section refers to many requirements found in these references, but in no way is it intended to cite or reiterate all provisions therein or elsewhere. It is the Asbestos Abatement Contractor's responsibility to know, understand, and abide by all such regulations and common practices.

1.07 FEES, PERMITS & LICENSES

- A. The Asbestos Abatement Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or process in the performance of the work specified in this section. The Asbestos Abatement Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights. The Asbestos Abatement Contractor shall hold the Owner and Consultant harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing, patent or royalty fee for use in the performance of the job, the Asbestos Abatement Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such rights.
- B. Asbestos Abatement Contractor shall be responsible for costs for all licensing requirements, where applicable and notification requirements and all other fees related to the Asbestos Abatement Contractors ability to perform the work in this Section.
- C. Secure all necessary permits for work under this Section, including hauling, removal, and disposal, fire, and materials usage, or any other permits required to perform the specified work.
- D. Maintain the work site in a neat and orderly manner at all times, so as not to interrupt or infringe upon the work of other trades. Perform all final cleaning of abatement work areas as required by this Section and Massachusetts Regulations to the approval of the Owner's Consultant. Upon completion of work in any given area, Asbestos Abatement Contractor shall remove all material and equipment associated with the work, not necessary to complete other phases of the work in that area.
- E. Comply with all requirements for final clearance and release of a work area as described in this Section and required by the Massachusetts Regulations prior to take down of polyethylene and area clean-up.

1.08 COORDINATION

- A. Extend full cooperation to Owner in all matters involving the use of Owner's facilities. At no time shall the Asbestos Abatement Contractor cause or allow conditions to be caused, which may cause risk or hazard to the general public, or conditions that might impair safe use of the facility.
- B. Coordinate the work of this section with that of all other trades as directed by the General Contractor and at the express consent of the Owner. Phasing and scheduling of this project will be subject to the approval of the Owner. The work of this Section shall be scheduled and performed so as not to impede the progress of the project as a whole. Work shall not proceed in any area without the express consent of the Owner and Consultant. The Asbestos Abatement Contractor shall be available within 24 hours notice for additional work if after acceptance of the work it is found that full abatement was not achieved from the initial work effort as determined by the Owner or Consultant.
- C. Complete Asbestos activities in the phases of the final schedule agreed upon by Owner and Consultant.

1.10 SUBSTITUTION OF MATERIALS OR METHODS

- A. Owner and Consultant approval is required for all modifications to methods, procedures, and design, which may be proposed by the Asbestos Abatement Contractor. It is the intent of these documents to allow the Asbestos Abatement Contractor to present alternative methods to the abatement processes herein, for review by Owner and Consultant. Any such modifications or substitutions to methods, procedures, or design shall comply with applicable regulations. Asbestos Abatement Contractor shall submit the proposed modification or substitution in accordance with the requirements of the General Conditions, and no later than fifteen (15) working days prior to planned commencement of proposed modification, for review and approval.
- B. Unless requests for modification or substitution are made in accordance with the above instructions and the instruction of the General Conditions, supported by sufficient proof of equality, Asbestos Abatement Contractor shall be required to furnish the specifically named or designed items, methods or procedures designated in this Section.
- C. If the modification or substitution necessitates changes or additional work, same shall be provided and the Asbestos Abatement Contractor shall assume the cost and the entire responsibility thereto unless performed under the approved Change Order Process.
- D. The Owner and Consultant's permission to make such substitution shall not relieve the Asbestos Abatement Contractor from full responsibility for the work.

1.11 SITE SECURITY

- A. The Asbestos Abatement Contractor is responsible for performing all work under this contract without contaminating the building environment with asbestos fibers. This includes interiors of duct work, outside containment locations, machinery and equipment and any other release into unregulated spaces. The Asbestos Abatement Contractor is responsible for making right and clean-up of any such contamination if found to be present.
- B. The Asbestos Abatement Contractor will be responsible for the security of the abatement area, allowing only authorized personnel into the area, and securing assigned entrances and exits with locked doorways at the end of the work day. Signs will be posted prior to asbestos removal as required in 29 CFR 1926.1101.

1.12 PROJECT MONITOR

- A. The Owner has retained ATLAS as their Consultant for the technical advisement and project management during the Project. In addition, ATLAS will perform project monitoring services during abatement activities. The Contractor shall regard ATLAS's direction, as authoritative and binding as provided herein, in matters outlined by this Section.
- B. ATLAS's licensed Project Monitor, acting as the Owner's Representative, will perform monitoring of Contractor work practices and performance, inspection of the worksites, and air sampling and analysis for each phase of the asbestos removal project. Quality control and testing criteria have been established in these specifications, and will be strictly enforced. ATLAS's Project Monitor will review matters relating to safety, interpretation of the specifications, and scheduling of work, and will make decisions upon consultation with the Consultant and Owner.
- C. It shall be the General Contractor's responsibility to coordinate the demolition subcontractor with the Asbestos Abatement Contractor with the Owner's Asbestos Project Monitor with his/hers requirements in the field BEFORE starting any asbestos abatement or suspect asbestos abatement begins.

1.13 TEMPORARY FACILITIES

- A. Use of Owner provided facilities is specified in Division 1 and shall be coordinated through the General Contractor and Owner.

PART II - PRODUCTS

2.01 MATERIALS

- A. All materials and equipment proposed to be used on this project shall be subject to the acceptance of the Owner and Consultant. The Asbestos Abatement Contractor shall comply with local, state and federal regulations pertaining to the selection and use of materials and equipment on this project. The Asbestos Abatement Contractor shall provide a submittal on all materials and equipment to be used for review and approval by the Consultant prior to commencement of the work.

PART III - EXECUTION

3.01 ABATEMENT PROCEDURES

- A. General: All work shall be subject to work area set up, abatement, final cleaning and disposal as per MADEP 310 CMR 7.15 and MADLS 454 CMR 28.00 Regulations.
- B. Personal Air Sampling: Daily personal and excursion sampling will be the responsibility of the Contractor to check personal exposure levels versus respiratory protection and to check work practices. The Contractor is responsible for his own personal sampling as outlined in OSHA Regulation 1926.1101. The Contractor shall post the personal air sample results within 24 hours.
- C. Remedial Cleaning: Remedial cleaning of horizontal surfaces, ledges, and equipment will be required prior to masking and sealing operations of work areas. Cleaning will be done using HEPA vacuums and wet methods. Determinations of additional remedial cleaning will be made on the basis of hazard potential to workers and the outside environment relating to setup and masking and sealing operations (as deemed by the Consultant). Respiratory protection and protective clothing will be required for the cleaning. Prior to remedial cleaning negative air filtration units and a three stage decontamination shall be in place and running and all wall and ceiling penetrations shall be sealed with fire retardant spray foam.
- D. Decontamination Chambers: The Contractor shall construct a decontamination chamber in accordance with local, state and federal regulations governing asbestos abatement.

- E. Negative Air Filtration: The Contractor shall establish negative pressure air filtration within the work areas (as required). The Contractor shall install, operate, and maintain a sufficient number of Negative Air Filtration Units (NAFU's) to meet the requirements of local, state and federal regulations.
- F. Removals: Removal of asbestos containing materials, unless specified otherwise, will be performed using negative air filtration techniques, wet methods, attached three stage decontamination chambers, the masking and sealing of openings, ducts and vents, full two-layer plastic containments and the encapsulation of post removal surfaces. Removals will be as indicated and as specified herein, and will be performed in a neat and workman like manner to the limits indicated or specified. Asbestos will be consistently and thoroughly wetted with a fine spray of amended water and will be carefully removed and immediately placed in approved and properly labeled six mil polyethylene disposal bags. Asbestos residual materials will be diligently scraped or brushed from surfaces. After brushing and scraping, surfaces will be free of visible debris and fibers and surfaces will be HEPA vacuumed clean.
- G. Visual Inspections: Work areas shall pass a visual inspection conducted by the Site Supervisor responsible for the project and the Owner's Project Monitor (i.e. Consultant). The criterion for this inspection will be the absence of visible debris in accordance with ASTM standard E1368-90. A certificate of visual inspection will be signed by the Project Monitor and the Site Supervisor after final inspection clearance. The Contractor will be responsible for the costs of visual inspection and testing required for any work which fails clearance air quality criteria.
- H. Encapsulation: A bridging encapsulant/lockdown sealant will be applied to remaining surfaces in direct contact with removal operations, polyethylene sheeting and on any porous surfaces within the work site. The chosen encapsulant must be compatible with the replacement materials and conform to the proper edition of applicable fire and electrical standards.
- I. Work Completion: Final visual inspections and air clearance testing shall be performed by the Project Monitor for all areas as specified herein.

3.02 DISPOSAL

- A. Packaging: Prior to post-abatement inspection, asbestos- containing waste shall be packaged in sealed double containers and removed from the work area to a specified transportation vehicle or a designated holding area approved by the Owner. At the end of each work day the Asbestos Abatement Contractor shall remove the debris accumulated during that day's work activities using procedures outlined in the Specifications. The Asbestos Abatement Contractor shall provide a daily tally of all bags removed.
- B. Temporary Storage of Waste: An area for temporary storage of asbestos waste must be approved by the Owner. Asbestos waste must be stored in a restricted area and must be in an **enclosed container** which is posted and secured whenever not in use. ACM Waste shall NOT be stored outside the building on the ground, pavement areas or other non-enclosed area. Asbestos waste material shall be loaded into a waste transportation vehicle/dumpster and hauled away as soon as there is a sufficient quantity available for direct transportation to the approved disposal site. ACM waste shall **NOT** be transferred back to the Asbestos Abatement Contractor's yard/facility unless approved by the Owner. ACM Waste shall only be stored at:
 - 1. An approved refuse transfer station facility permitted or that is managing such wastes in accordance with 310 CMR 19.061 and/or;
 - 2. The site of generation of the asbestos abatement activity.

Note: All ACM waste shall be shipped from the site for disposal within 30 days

after completion of the work and acceptance of a final visual inspection by the Consultant.

- C. OSHA/EPA labeling: Asbestos warning labels having permanent adhesive and waterproof print, or being permanently printed on the container, shall be affixed to the outside of all asbestos containers, and each inside bag, except that nonfriable asbestos-containing waste that has not been and does not have a high probability of becoming, crumbled, pulverized, or reduced to powder need not be labeled. Labels will be conspicuous and legible and shall contain the following warning:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

The Asbestos Abatement Contractor is directed to properly label each waste bag in accordance with the latest NESHAP standard, Section 61.150, with the following information:

SITE OWNER'S NAME
SITE NAME

- D. DOT labeling and marking: A DOT "class 9" shipping label and DOT mark shall be applied to or be printed on each packaging of asbestos-containing materials.
- E. Waste Transportation: All ACM waste shall be containerized pursuant to 310 CMR 7.15 prior to being transported. All ACM waste shall be transported in totally enclosed vehicles or containers that are designed, constructed, and operated to prevent spills, leaks or emissions. All ACM waste shall be transported in compliance with 40 CFR Part 61 and applicable Department of Transportation (DOT), OSHA and local regulations. Each vehicle transporting asbestos-containing waste shall be marked with asbestos danger signs during loading and unloading of the waste, in accordance with the NESHAP, 40 CFR 61.150.
- F. Asbestos waste shipment records: The Asbestos Abatement Contractor shall prepare the waste shipment records for disposal of the ACWM. **All ACWM waste to be disposed of from the site shall be shipped on an "Asbestos Waste Shipment Record" that has been approved by the Owner. An Owner representative shall sign-off as "Generator" on the Asbestos Waste Shipment Record for each shipment leaving the site.**
- G. The following information shall be included on the waste shipment record for each and every load of ACM transported off-site:
1. The name, address and telephone number of the owner/operator of the facility or dumping ground where asbestos abatement activities have occurred;
 2. The quantity and type (friable or non-friable) of the ACWM in cubic meters (cubic yards) and a description of the container used for shipment;
 3. The name, address and telephone number of the person who conducted any asbestos abatement activity;
 4. The name and telephone number of the disposal site operator;
 5. The name and physical location of the disposal site;
 6. The date transported;
 7. The name, address, and telephone number of the transporter(s);
 8. Certification by the owner/operator of the facility or dumping ground where asbestos abatement activities have occurred/where asbestos waste was generated that the contents of each shipment have been characterized, packaged, marked and labeled in accordance with 310 CMR 7.15;
 9. Signature of each transporter confirming the contents of each shipment are in all respects in the proper condition for transport according to applicable international, federal, state and local regulations;

10. Signature by the receiving disposal facility confirming that:
 - i) the quantity of ACWM listed on the waste shipment record is the same as the quantity accepted for disposal; and
 - ii) it holds appropriate permits and/or authorizations to accept for disposal ACWM described on waste shipment records.

Note: The final waste shipment records (with signature of acceptance at the landfill) for disposal of ACM from the project site shall be received by the Owner within 35 days of shipment from the site.

3.03 QUALITY CONTROL AND TESTING

- A. The Asbestos Abatement Contractor shall be responsible for achieving acceptable visual and final air clearance testing for ALL abatement areas as follows:
 1. Clearance inspection: ATLAS's Project Monitor shall inspect the work area and surrounding areas for clearance using visual and physical methods, prior to clearing the project for air monitoring clearance procedures.
 2. Based upon the quantity of material to be abated, either Phase Contrast Microscopy (PCM) or Transmission Electron Microscopy (TEM) clearance testing will be performed to confirm the completion of removal. All clearance testing shall be performed in accordance with state of Massachusetts and EPA "Asbestos Hazard Emergency Response Act" (AHERA) Regulations. The work areas shall be considered complete if the following criteria are met:
 - i. Containments cleared and samples analyzed by Phase Contrast Microscopy (PCM): Maximum airborne fiber concentration of <0.01 fibers per cubic centimeter (minimum 5 samples).
 - ii. Containment's cleared and samples analyzed by Transmission Electron Microscopy (TEM): The average concentration of asbestos on the five inside containment samples in not statistically different (as determined by the Z-test calculation found in Appendix A of 40
 - iii. CFR 763 Subpart E) from the average asbestos concentrations of the five outside containment samples, and average asbestos concentrations of the three field blanks are below the filter background level of 70 structures per square millimeter (70 s/mm²).
 - iv. TEM air clearance analysis shall be at 24-hour turnaround time upon laboratory receipt of the samples.

Notes Should results fail the clearance criteria described above, or if the visual inspection fails, the Asbestos Abatement Contractor shall re-clean the entire work area at no additional cost to Owner in accordance with applicable requirements and regulations. Costs associated with all additional testing performed by the Owner's Consultants required to clear the containment areas shall be deducted from the General Contractor's Contract.

ATTACHMENT A

**TABLE 1.0
SUMMARY OF ACM TO BE ABATED**

TABLE 1.0 SUMMARY OF ACM TO BE ABATED				
#	LOCATION	MATERIAL	QUANTITY	NOTES
1	Tunnel/Crawlspace	Pipe & Fitting Insulation	7,000 LF	• Contaminated soil to be free of debris (rocks, paper, etc.). All insulation removed.
2	Tunnel/Crawlspace	Contaminated Soil	4,500 SF	

END OF SECTION