Project Manual

SYNERGY SCHOOL
40 BUTTERNUT DRIVE
EAST HARTFORD, CT

SDE PROJECT NUMBER 043-0239 CV

AUGUST 1, 2018

Prepared for

East Hartford Public Schools

East Hartford, Connecticut

Building Official Milton Gregory Grew

Fire Marshal Justin Wagner

Health Inspector JAMES P. CARDIER

Approved 504 Official

Prepared by

TRC Environmental Corporation

Windsor, Connecticut

TABLE OF CONTENTS

.

PART 1 – GENERAL

1.1 SCOPE

A. The work specified herein shall be the abatement of asbestos-containing materials by persons who are knowledgeable, qualified, and trained in the removal, treatment, handling, and disposal of asbestos-containing material, and the subsequent cleaning of the affected environment. The Contractor shall have a Competent Person in control on the job site at all times during asbestos abatement work. This person must comply with applicable Federal, State and Local regulations that mandate work practices, and be capable of performing the work of this contract.

B. The Contractor shall be licensed by the State of Connecticut in accordance with State of Connecticut Regulations, Sections 20-440-1 through 9. Should any portion of the work be subcontracted, the subcontractor must also be licensed in accordance with these regulations.

C. The East Hartford Public Schools will retain the services of a State of Connecticut licensed Project Monitor for protection of its interests and those using the building. Pre-abatement, during abatement and post-abatement sampling will be conducted as deemed necessary.

D. Deviations from this Specification require the written approval of the East Hartford Public Schools.

E. Restore all work areas and auxiliary areas utilized during abatement to conditions equal to or better than original. Any damage caused during the performance of abatement activities shall be repaired by the Contractor (e.g., paint peeled off by barrier tape, nail holes, water damage, removal of ceiling tiles or concrete blocks, broken glass, etc.) at no additional expense to the East Hartford Public Schools. The Contractor is responsible for protecting all objects in work areas that are permanent fixtures or too large to remove.

The Contractor shall be responsible for the following general requirements:

1. Obtain all approvals and permits, and submit all notifications required.

2. Provide, erect, and maintain all planking, bracing, shoring, barricades, and warning signs.

3. Unless otherwise specified, all equipment, fixtures, piping and debris resulting from demolition shall become the property of the Contractor and shall be removed from the premises.

4. Materials to be reused shall be removed with the utmost care to prevent damage of any kind. All material to be reused shall be stored as directed. The Contractor shall coordinate with the East Hartford Public Schools as to the storage location.

5. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

F. It shall be the responsibility of the Contractor to protect and preserve in operating condition, all utilities traversing the building and site. Damage to any utility due to work under this Contract shall be repaired to the satisfaction of the East Hartford Public Schools at no cost to the East Hartford Public Schools.

1.2 DESCRIPTION OF WORK

A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications.

B. The asbestos abatement work shall include the removal of asbestos-containing materials as specified herein. This abatement project was designed by Mr. Robert Romejko, a State of Connecticut licensed Asbestos Project Designer (#000008).

1. Work Area 1 – As Shown on Drawing ASB-001

Remove ACM in the form of:

- Floor tile and associated mastic (all layers)
- Cove base and mastic

under containment with a pressure differential and contiguous decontamination units. Perform work in accordance with CT DPH approved AWP. (one (1) layer of poly on the ceiling if the poly is in contact with the ceiling. Other-wise two (2) layers are required.) Casework remains. Remove carpets were present. Utilize shot blasting or a grinder equipped with a cowling for mastic removal.

2. Work Area 2 – As Shown on Drawing ASB-001

Remove ACM in the form of:

- Floor tile and associated mastic (all layers)
- Cove base and mastic
- Mudded fittings
- Flex connectors

under containment with a pressure differential and contiguous decontamination units. Perform work in accordance with CT DPH approved AWP. (one (1) layer of poly on the ceiling if the poly is in contact with the ceiling. Other-wise two (2) layers are required.) Casework remains. Remove carpets were present. Utilize shot blasting or a grinder equipped with a cowling for mastic removal.

3. Work Area 3 – As Shown on Drawing ASB-001

Remove ACM in the form of:

- Boiler insulation
- Boiler breeching insulation
- Mudded fittings

under full containment with a pressure differential and contiguous decontamination units.
.

1.3 DEFINITIONS

Accessible - A space easily accessed and which can be entered or seen without demolition.

Adequately Wet - Sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

AHERA - Asbestos Hazard Emergency Response Act - U. S. EPA regulation 40 CFR Part 763 under Section 203 of Title II of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2643. This rule mandates inspections, accreditations of persons involved with asbestos, and -final air clearances following abatement in public and private schools, and public and commercial buildings.

Asbestos - The term asbestos includes chrysotile, amosite, crocidolite, asbestiform tremolite, asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and/or altered.

Asbestos Abatement - The removal, encapsulation, enclosure, renovation, repair, demolition or other disturbance of asbestos-containing materials.

Asbestos-Containing Waste Materials (ACM Waste) - Any waste that either contains or is contaminated with asbestos. This term includes asbestos-containing materials and materials contaminated with asbestos including disposable equipment and clothing, filters from control devices, polyethylene sheeting generated from disassembly of a containment structure, and any other items from within regulated areas which cannot be properly decontaminated.

Asbestos Control Area - An area where asbestos abatement operations are performed which is isolated by physical boundaries which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris. Two examples of an Asbestos Control Area are a "full containment" and a "glovebag".

Asbestos Fiber - A particulate form of asbestos, tremolite, anthophyllite, actinolite, or a combination of these minerals having a length of five micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

Authorized Asbestos Disposal Facility - A location approved by the Connecticut Department of Environmental Protection for handling and disposing of asbestos waste or by an equivalent regulatory agency if the material is disposed of outside the State of Connecticut.

Category I Non-Friable Asbestos-Containing Material (ACM) - Asbestos-containing packings, gaskets, resilient Floor coverings 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.

Category II Non-Friable ACM - Any material, excluding Category I non-friable ACM, 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.

Class I Asbestos Work - Activities involving the removal of TSI and surfacing ACM and PACM.

Class II Asbestos Work - Activities involving the removal of ACM which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work - Repair and maintenance operations, where ACM, including TSI and

surfacing material, is likely to be disturbed.

Class IV Asbestos Work - Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

Competent Person - 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, 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 who is specifically trained in a training course which meet the criteria of EPA's Model Accreditation Plan (40 CFR 763). The Asbestos Abatement Site Supervisor as defined in RCSA>

Concealed Space - Space which is out of sight. Examples of a concealed space include area above ceilings; below floors; between double walls; furred-in areas; pipe and duct shafts; and similar spaces.

Confined Space - See Permit Required Confined Spaces (PRCS).

Critical Barrier - A minimum of two layers of six (6) mil polyethylene sheeting taped securely over windows, doorways, diffusers, grilles and any other openings between the Work Area and uncontaminated areas outside of the Work Area, including the outside of the building.

Decontamination Enclosure System - A series of rooms separated from the Work Area and from each other by air locks, for the decontamination of workers and equipment.

Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

DEP - The Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106.

DPH - The Connecticut Department of Public Health, 410 Capitol Avenue, Hartford, CT 06106.

Differential Pressure - A difference in the static air pressure between the Work Area and occupied areas, and is developed by the use of HEPA filtered exhaust fans. This differential is generally in the range of 0.02 to 0.04 inches of water column.

Encapsulant - Specific materials in various forms used to chemically entrap asbestos fibers in various configurations to prevent these fibers from becoming airborne. There are four types of encapsulant as follows:

1. Removal Encapsulant (can be used as a wetting agent).

2. Bridging Encapsulant (used to provide a tough durable surface coating to asbestos-

containing material).

3. Penetrating Encapsulant (used to penetrate the asbestos containing material down to substrate, encapsulating all asbestos fibers).

4. Lock-down Encapsulant (used to seal off "lock-down" minute asbestos fibers left on surfaces from which asbestos containing materials have been removed).

Encapsulation - The application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the air.

Engineering Controls - Controls to include, but not be limited to, pressure differential equipment, decontamination enclosures, critical barriers and related procedures.

Equipment Decontamination Enclosure System - The 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 a Holding Area.

Exposed - Open to view.

Finished Space - Space used for habitation or occupancy where rough surfaces are plastered, paneled or otherwise treated to provide a pleasing appearance.

Fixed Critical Barrier - Barrier constructed of 2" x 4" wood or metal framing 16" O.C., with 2" plywood on the occupied side and two layers of six (6) mil polyethylene sheeting on the Work Area side to prevent unauthorized access or air flow.

Fixed Object - A piece of equipment or furniture in the Work Area which cannot be removed from the Work Area, as determined by the Project Monitor.

Friable Asbestos Material - Material 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 can be crumbled, pulverized or reduced to powder by hand pressure. If the asbestos content is less then 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Full Containment – Two layers of six (6) mil poly on walls and floors, contiguous decontamination units, pressure differential between work area and adjacent area and engineering controls.

Glovebag - A sealed compartment with attached inner gloves used for the handling of asbestos-containing materials. Properly installed and used glovebags provide a small Work Area enclosure typically used for small scale asbestos stripping operations. Information on glovebag installation, equipment and supplies, and work practices is contained in 29 CFR 1926.1101).

Glovebag 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 in a non-contaminated work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of six (6) mil polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag 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. This technique requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant, East Hartford Public Schools's Project Monitor and DPH when not pre-approved.

HEPA Filter Equipment - High-efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of trapping and retaining asbestos fibers. Filters shall be of 99.97 percent efficiency for retaining fibers of 0.3 microns in diameter or larger.

Inaccessible - A space not accessible and which cannot be entered or seen without demolition.

Lock-Down - The procedure of spraying polyethylene sheeting and building materials with an encapsulant type sealant to seal in non-visible asbestos-containing residue.

Mini-Containment - A procedure using a single layer of polyethylene sheeting to contain the Work Area. Access to the mini-containment is controlled by an air lock which also serves as a Holding Area. This procedure requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant, East Hartford Public Schools's Project Monitor and DPH when not pre-approved.

Movable Object - A piece of equipment or furniture in the Work Area which can be removed from the Work Area, as determined by the Project Monitor.

Negative Exposure Assessment - For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, the employer may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria:

1. Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or

2. Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions "closely resembling" the processes, type of material, control methods, work practices, and environmental conditions

used and prevailing in the employer's current operations, the operations were conducted by employees whose training and experience are not more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit; or

3. The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

Non-Friable Asbestos-Containing Material - Material 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.

NPE - Negative pressure enclosure.

Owner or Operator of a Demolition or Renovation Activity - Any person who owns, leases, operates, controls and supervises the facility being demolished or renovated or any person who owns, leases, operates, controls or supervises the demolition or renovation, or both.

Permissible Exposure Limit (PEL) - (1) time-weighted average unit (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter (f/cc) or air as an eight (8) hour time-weighted average time (TWA). (2) excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fibers per cubic centimeter of air (f/cc) as averaged over a sampling period of thirty (30) minutes.

Permit Required Confined Spaces (PRCS) - A confined space that has the potential to cause harm to the entrants. These spaces could contain a hazardous atmosphere, material that could engulf the entrant, have an internal configuration that could entrap an entrant and any other serious safety or health hazard. PRCS require special entry precautions which could include retrieval systems, ventilation, monitoring and air line respirators. A written permit is required to be completed prior to entry. All TRC personnel entering a PRCS must follow TRC's health and safety program and the requirements for entering PRCS.

Personal Monitoring - Air sampling within the breathing zone of an employee.

Pre-Clean - The process of cleaning an area before asbestos abatement activities begin to ensure all dust and debris in the area considered to be asbestos-containing are properly contained and disposed of. This increases the likelihood the area will pass aggressive air sampling clearance requirements after asbestos-containing materials have been removed.

Presumed Asbestos-Containing Material (PACM) - TSI and surfacing material found in buildings constructed no later than 1980.

Project Monitor - The certified and licensed individual contracted or employed by the building owner of contractor to supervise and/or conduct air monitoring and analysis schemes. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of an abatement project. Requirements for Project Monitor are defined in the Connecticut DPH regulations (Sections 20-440-1 through 20-440-9, inclusive). In addition to these requirements, this person shall be listed in the American Industrial Hygiene Association's Asbestos Analysts Registry.

Regulated Area - Area established by the employer to demarcate areas where Class I, II and III work is conducted and any adjoining area where debris and waste from such asbestos work accumulate; a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the Permissible Exposure Limit.

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.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting members are wrecked or taken out are demolitions.

Repair - Overhauling, rebuilding, reconstructing or reconditioning of structures or substrates where asbestos, is present.

Thermal System Insulation (TSI) - Materials applied to pipes, fittings, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

Unfinished Space - Space used for storage, utilities or work area where appearance is not a factor. Examples of an unfinished space include crawlspace; pipe tunnel and similar spaces.

Visible Emissions - Any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined water vapor.

Visible Residue - Any debris or dust on surfaces in areas within the Work Area where asbestos abatement has taken place and which is visible to the unaided eye. All visible residue is assumed to contain asbestos.

Waste Generator - Any owner or operator of a source whose act or process produces asbestos-containing waste material.

Waste Shipment Record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

Work Area - Specific area or location where the actual work is being performed or such other area of a facility which the Commissioner determines may be hazardous to public health as a result of such asbestos abatement.

Worker Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled passage of workers and authorized visitors, typically consisting of a Clean Room, a Shower Room and an Equipment Room that is under negative pressure.

1.4 REFERENCES

A. The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply.

1. Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1001 - Asbestos, Tremolite, Anthophyllite, and Actinolite

29 CFR 1910.134 - Respiratory Protection

29 CFR 1926.21 - Safety Training and Education

29 CFR 1926.32 - Competent Person

29 CFR 1926.51 – Sanitation

29 CFR 1926.59 - Hazard Communication.

29 CFR 1926.62 - Lead in Construction

29 CFR 1926.200 - Accident Prevention Signs and Tags

29 CFR 1926.417 - Lockout and Tagging of Circuits

29 CFR 1926.1101 - Asbestos

2. Environmental Protection Agency (EPA)

40 CFR 61, Subpart M - National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule

40 CFR 763, Subpart E - Asbestos Hazard Emergency Response Act (AHERA)

40 CFR 763, Subpart G - Worker Protection Rule

3. State of Connecticut, Department of Public Health (DPH) Regulations

Section 20-440-1 through 20-440-9- Standards for Asbestos Abatement

Section 22a-209-1; 22a-209-8(i); 22a-449(c)-11; and 22a-449(c)-100 - Hazardous Waste Management Regulations

4. American National Standards Institute (ANSI)

ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust Systems

ANSI Z88.2 - Respiratory Protection

5. American Society of Testing and Materials (ASTM)

ASTM E 84 - Surface Burning Characteristics of Building Materials

ASTM E 96 - Water Vapor Transmission of Materials

ASTM E 119 - Fire Tests of Building and Construction Materials

ASTM E 736 - Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members

ASTM E 1368 - Visual Inspection of Asbestos Abatement Projects

ASTM E 1494 - Encapsulants for Spray- or Trowel- Applied Friable Asbestos-Containing Building Materials

6. Underwriters Laboratories, Inc. (UL)

   UL 586 - High-Efficiency, Particulate, Air Filter Units

1.5 DOCUMENTATION

A. Submit two copies of the following documentation to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times. Submission must be made prior to the Pre-abatement Meeting, which will be held two weeks prior to the start of abatement. The General Contractor, Abatement Contractor, Architect, Asbestos Project Designer and Owners Representative shall be present at the meeting.

B. Manufacturer's Catalog Data:

Local Exhaust Equipment
Vacuum Equipment
Respirators
Pressure Differential Automatic Recording Instrument
Surfactant
Chemical Encapsulant
Polyethylene Sheeting
Airless Sprayers
Portable Shower Units
Adhesive Removal Chemicals
MSDS for All Materials Delivered to the Site
Letters of Compatibility for Encapsulant and Coating Materials

C. Statements:

Notification to State of Connecticut Department of Public Health
(ten (10) days before the start of asbestos abatement)
Notification to the EPA
(ten working days (10) days before the start of asbestos abatement)
Notification to State of Connecticut Department of Energy and Environmental Protection
(if waste is to be disposed of in Connecticut)
Worker Medical Certification
Worker Training Certification
Worker Respirator Fit Testing
OSHA Laboratory Certification
Contractor's Project Monitor Certification
Landfill Approval
Safety Plan
Respirator Protection Plan

Initial Exposure Assessment

1. Copies of all required notifications, approvals and permits for the removal, disposal and transport asbestos-containing or contaminated materials.

2. Documentation from a physician certifying that all employees who may be exposed to airborne asbestos in excess of the background level have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health affects. In addition, document that personnel have received medical monitoring required in 29 CFR 1926.1101. They shall also be informed of the specific types of respirators the employee shall be required to wear and the work he/she will be required to perform as well as special work place conditions such as high temperature, high humidity and chemical contaminants which to which he/she may be exposed.

3. Documentation certifying that all employees have received training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis.

4. Documentation of respiratory fit testing for all employees who must enter the Work Area. This fit testing shall be in accordance with qualitative procedures as detailed in 29 CFR 1926.1101.

5. Establish and supervise in accordance with 29 CFR 1926.21, a program for the education and training of workers in the recognition, avoidance and prevention of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. Include any site-specific information to address health and safety procedures unique to this project.

6. Establish a written Respiratory Protection Plan in accordance with 29 CFR 1910.134. This plan shall establish procedures governing the selection and use of respirators and shall include such information as training in the proper use of respirators; medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required; training in proper use and limitations of respirators; respirator fit testing; regular inspection and evaluation of the continued effectiveness of the program; and other elements included in the standard.

7. Demonstrate that employee's exposures will be below the PELs for Class I asbestos work until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PELs, or otherwise make a Negative Exposure Assessment.

D. Records:

Sign-in/out Logs
Pressure Differential Recording Data
NPE Inspection and Smoke Test Logs
Rental Equipment Statements

When rental equipment is to be used in removal areas or to transport waste materials, submit a copy of written notification provided to the rental company informing them of the nature of use of the rented equipment.

E. During the asbestos abatement, submit to the Asbestos Project Designer and receive acknowledgment of the following:

1. Results of the personal air sampling data within one (1) working day of when the sampling was done.

2. Copies of all waste shipment records of asbestos waste that is transported from the facility site.

F. At the conclusion of the project, submit to the Asbestos Project Designer and receive acknowledgment of the following:

1. The original copy of all completed waste shipment records. This shall be submitted to the Asbestos Project Designer within 35 days from the date the waste was transported from the facility site.

1.6 PERSONNEL PROTECTION

A. Instruct workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

B. Ensure workers are fully protected with respirators and protective clothing during work in the Asbestos Control Area, where there is the possibility of disturbing asbestos-containing or asbestos-contaminated materials.

C. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.1101. Provide appropriate respiratory protection for each worker and ensure usage during potential asbestos exposure. As a minimum, workers

shall be equipped with powered air-purifying respirators (PAPR) with HEPA filters.

D. Select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11. Provide an adequate supply of filter elements for respirators in use.

E. Minimum respiratory protection shall be as follows:

Airborne concentration of asbestos, tremolite, anthophyllite, actinolite or a combination of these minerals	Required Respirator
Not in excess of 1 f/cc (10 × PEL) or otherwise as required	Half mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters.
Not in excess of 5 f/cc (50 × PEL)	Full face piece air purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100 × PEL)	Any powered air-purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1000 × PEL)	Full face piece supplied air respirator operated in pressure demand mode.

Note: 1. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations.

2. A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.

3. The Contractor shall provide a full face piece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus for all persons within the regulated area where apparatus for all persons within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and, the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full face piece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8 hour time weighted average.

4. If compressed air is used for supplied air respirators, this air will meet the requirements for grade D breathing air as described by the Compressed Gas Association Commodity Specification G-7.1-1996. The compressor will be equipped with the necessary safety deices and sorbends/filters, and be situated to avoid entry of contaminated air. In addition, the compressor will be equipped with alarms to indicate failure or overheating, and additional alarms for indicating the presence of carbon monoxide. Air line couplings will be incompatible with outlets for other gas systems to prevent inadvertent servicing of air line respirators with non-respirable gases.

F. Provide and require all workers to wear protective clothing in Work Areas where asbestos fiber concentrations exceed permissible limits established by OSHA. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.

G. Provide all authorized persons entering contaminated areas with proper respirators and protective clothing.

H. Ensure that all workers and authorized persons enter and leave the Asbestos Control Area through the Worker Decontamination Enclosure System.

I. Ensure all contaminated protective clothing remains in the Equipment Room for reuse or disposal of as contaminated waste.

J. Ensure workers do not eat, drink, smoke or chew gum or tobacco while in the Asbestos Control Area.

1.7 EQUIPMENT REMOVAL PROCEDURE

A. Clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet wiping before moving such items into the Equipment Decontamination Enclosure System for final cleaning and removal to uncontaminated areas. Ensure that personnel do not leave the Asbestos Control Area through the Equipment Decontamination Enclosure System.

1.8 SEQUENCE OF WORK

A. Proceed in accordance with the sequence of work as mutually agreed upon with the East Hartford Public Schools.

B. The following sequence of work shall be used for the asbestos abatement work:

1. A visual inspection of the Work Area to determine pre-existing damage to facility components.

2. Release of work area to the Contractor.

3. All temporary utilities required for the project shall be on site and operational prior to the initiation of asbestos work.

4. Removal of all movable objects from the Work Area undergoing abatement by the Contractor.

5. Abatement of all asbestos-containing materials by the Contractor.

6. Air sampling by the East Hartford Public Schools's Project Monitor for re-occupancy.

7. Cleanup by the Contractor. Work Areas must be returned to their original condition or better.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description. Do not use damaged or deteriorating materials. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fire retardant polyethylene sheet in roll size to minimize the frequency of joints, shall be delivered to job site with factory label indicating four (4) or six (6) mil.

B. Polyethylene disposable bags shall be six (6) mil with pre-printed label. Disposable bags shall be opaque.

C. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces. Tape must be capable of adhering under both dry and wet conditions.

D. Surfactant (wetting agent) shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to

provide a concentration one (1) ounce surfactant to five (5) gallons of water or as directed by the manufacturer.

E. Containers must be impermeable and shall be both air and watertight. Containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101 and EPA NESHAPS 61.150 as appropriate.

F. Labels and signs shall conform to OSHA Standard 29 CFR 1926.1101.

G. Encapsulant shall be bridging or penetrating type which has been approved by the Design Consultant. Usage shall be in accordance with manufacturer's printed technical data. Encapsulant must be compatible with new materials being installed. Encapsulant shall be clear.

H. Glovebag assembly shall be manufactured of six (6) mil transparent polyethylene or PVC with two (2) inward projecting long sleeve gloves, an internal pouch for tools, and an attached labeled receptacle for waste.

2.2 TOOLS AND EQUIPMENT

A. Tools and equipment shall be suitable for asbestos removal.

B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.

C. Electrical equipment, protective devices, emergency generators and power cables shall conform to all applicable codes.

D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. Showers shall be equipped with hot and cold or warm running water. One shower stall shall be provided for each eight workers.

E. Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. No air movement system or air filtering equipment shall discharge unfiltered air outside the Asbestos Control Area.

F. Pressure differential automatic recording instrument shall be provided to ensure exhaust air filtration devices provide the minimum pressure differential required between the Work Area and occupied areas of the facility.

G. Spray equipment shall be capable of mixing wetting agent with water and capable of

generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Asbestos Control Area.

H. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 microns in diameter or larger.

I. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.

J. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the Work Area shall be provided as appropriate for the work.

PART 3 - EXECUTION

3.1 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

A. Prior to beginning work, the Design Consultant, East Hartford Public Schools's Representative and Contractor shall perform a visual survey of the Work Area and list all pre-existing damage to building components. The Contractor shall submit to the East Hartford Public Schools's Representative a list which shall include all damaged areas not scheduled to be repaired under this Contract and include photographs, video tapes as applicable.

B. Post warning signs meeting the specifications of OSHA 29 CFR 1910 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of work place enclosure barriers.

C. Utilize engineering controls and personnel protective equipment while installing enclosures and supports when asbestos-containing materials may be disturbed.

D. When feasible, shut down and lock out electrical power, including all receptacles and light fixtures. Protect receptacles and light fixtures remaining in the Work Area with six (6) mil polyethylene and seal with tape. Protect fire alarm system components remaining in the area with six (6) mil polyethylene and seal with tape. Coordinate all power and fire alarm isolation with the East Hartford Public Schools.

E. Provide temporary power and lighting, if applicable, and ensure safe installation, including ground fault protection, of temporary power sources and equipment in compliance with applicable electrical code and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

F. Shut down and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to other areas of the building. Seal all vents. Construct wooden platform over gas burners and gas trains to prevent damage.

G. Pre-clean movable objects within the proposed Work Areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate and remove such objects from Work Areas to a temporary location.

H. Pre-clean fixed objects within the proposed Work Areas, using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate, and enclose with two layers of six (6) mil polyethylene sheeting sealed with tape. Objects which must remain in the Work Area and which require special ventilation or enclosure include electrical equipment, pumps, compressors, control panels, and meter equipment.

I. Clean the proposed Work Areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

J. Seal off all openings between the Work Area and the uncontaminated areas outside of the Work Area with critical barriers. Doorways and corridors, which will not be used for passage during work, must be sealed with fixed critical barriers.

K. Conspicuously label and maintain emergency and fire exits from the Asbestos Control Area satisfactory to the Project Monitor.

3.2 WORKER DECONTAMINATION ENCLOSURE SYSTEM

A. Establish contiguous to the Work Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series. Access to the Work Area shall only be through this enclosure.

B. Access between rooms in the Worker Decontamination Enclosure System shall be through double flap curtained openings (air locks). Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be completely sealed ensuring sole source of airflow into the Asbestos Control Area originates from the outside uncontaminated areas.

C. The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.

D. The Shower Room shall be of sufficient capacity to accommodate the number of workers.

Supply warm water to showers. Provide one shower for each eight workers. No worker or other person shall leave an Asbestos Control Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an approved drain.

E. No personnel or equipment shall be permitted to leave the Asbestos Control Area unless just decontaminated by showering, wet cleaning or HEPA vacuuming to remove all asbestos debris. No asbestos-contaminated materials or persons shall enter the Clean Room.

3.3 EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

A. Establish contiguous to the Work Area an Equipment Decontamination Enclosure System consisting of two (2) totally enclosed chambers divided by a double flap curtained opening. Other effective designs are permissible. This enclosure must be constructed so as to ensure that no personnel enter or exit through this unit.

3.4 SEPARATION OF WORK AREAS FROM OCCUPIED AREAS

A. Occupied areas and/or building space not within the Asbestos Control Area shall be separated from asbestos abatement Work Areas by means of airtight barriers. Barriers at openings with dimensions exceeding two (2) feet in both directions shall be blocked with fixed critical barriers.

B. Do not impair required building exits from any occupied building area. Where normal exits have been blocked by the asbestos work, provide temporary exit signs directing building occupants to the nearest available exit location.

C. For Class I work, visually inspect and smoke test barriers to assure an effective seal. Repair defects immediately.

D. Create a pressure differential in the range of 0.02 to 0.04 inches of water column between the Work Area and occupied areas by the use of acceptable pressure differential equipment. Provide a sufficient quantity of units to exhaust the volume of air within the Asbestos Control Area a minimum of four times per hour. Continuously monitor the pressure differential between the Work Area and occupied areas utilizing recording type equipment to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column.

3.5 ASBESTOS REMOVAL

A. A Competent Person shall be on the job at all times to ensure the establishment and maintenance of the negative pressure enclosure (NPE) and proper work practices throughout the project.

B. Do not begin abatement work until authorized by the East Hartford Public Schools's Project Monitor. Follow the steps for abatement as outlined in Section 1.8, Sequence of Work.

C. Before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches, and smoke tested for leaks, and any leaks sealed. Results of the NPE inspection shall be logged.

D. Spray asbestos materials with amended water, using airless spray equipment capable of providing a "mist" application to reduce the release of fibers during the removal operation.

E. In order to maintain indoor asbestos concentrations at a minimum, remove the wet asbestos in manageable sections. Materials shall not be allowed to dry out. Material drop shall not exceed 8 feet. For heights up to 15 feet provide inclined chutes or scaffolding to intercept drop. For heights exceeding 15 feet provide enclosed dust-proof chutes.

F. Fill disposal containers (six (6) mil polyethylene bags or fiber drums) as removal proceeds, seal filled containers, apply caution labels and clean containers before removal to wash area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Bags may be placed in drums for staging and transportation to the disposal site. Bags shall be decontaminated by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape for transport to the waste disposal site. Small components and asbestos containing waste with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. Wet clean each container thoroughly before moving to Holding Area. Ensure that workers do not enter from uncontaminated areas into the Washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the Equipment Decontamination Enclosure.

G. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work the surfaces being cleaned shall be kept wet.

H. If at any time during asbestos removal, should the East Hartford Public Schools's Project Monitor suspect contamination of areas outside the Work Area, the Contractor shall stop

all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and visual inspections determine decontamination.

I. Containerize asbestos-containing waste material removed daily. Do not allow ACM to remain on the floor overnight, allowing it to dry out.

3.6 CLEAN-UP PROCEDURE

A. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene wall covering. Carefully remove the cleaned outer layer of polyethylene from the walls, fold inward as material is being removed, and place in disposal containers. Any debris which may have leaked behind the outer layer shall be removed by HEPA vacuuming and/or wet cleaning.

B. Remove contamination from the exteriors of the negative air machines, scaffolding, ladders, extension cords, hoses and other equipment inside the Work Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning.

C. The East Hartford Public Schools's Project Monitor shall conduct a thorough visual inspection utilizing a high-intensity flashlight, with the containment barriers in place, to detect visible accumulations of dust or bulk asbestos-containing materials remaining in the Work Area. Should dust, debris or residue be detected, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean-up of the work site. At the conclusion of the final visual inspection, the East Hartford Public Schools's Project Monitor and the Contractor's supervisor shall certify that they have visually inspected the work area and have found no dust, debris or residue.

D. Once the area has been re-cleaned, any equipment, tools or materials not required for completion of the work, shall be removed from the Work Area. Negative air filtration devices shall remain in place and operating for the remainder of the clean-up operation.

E. Apply a lock-down encapsulant to all surfaces within the Work Area from which asbestos has been removed. The Contractor is responsible for ensuring that the encapsulant and the new floor tile mastic are compatible i.e. the new tiles will adhere to the floor.

F. Air sampling for re-occupancy clearance shall be undertaken using aggressive sampling techniques. Analysis of clearance samples shall follow State of Connecticut Regulations, Section 19a-333-7-(h). Areas which do not comply shall continue to be cleaned by and at the Contractors expense, until the specified Standard of Cleaning is achieved as evidenced by results of air testing. When the Work Area passes the re-occupancy clearance, controls

established by this specification may be removed.

G. Remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems leaving negative air filtration devices in operation. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. Dispose of poly as asbestos waste.

3.7 REINSTALLATION OF DISPLACED EQUIPMENT

A. After re-occupancy is granted, re-secure mounted items removed during the course of the work to their former positions.

B. Re-establish to proper working order all HVAC, mechanical and electrical systems including lights, exit lights, fire alarm systems and sound systems.

C. Install new filters in HVAC systems and dispose of used filters as asbestos-containing waste. All systems shall be function tested in the presence of the East Hartford Public Schools's Representative.

3.8 DISPOSAL OF ASBESTOS

A. Disposal of asbestos-containing and/or asbestos contaminated material shall occur at an authorized site and must be in compliance with the requirements of, and authorized by the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.

B. Disposal approval shall be obtained prior to commencement of asbestos removal.

C. Warning signs must be attached to vehicles used to transport asbestos-containing waste. Warning signs shall be posted during loading and unloading of disposal containers. The signs must be posted so that they are plainly visible.

D. Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place.

E. The completed waste shipment record shall be provided to the East Hartford Public Schools's Representative.

3.9 CONTRACTOR RESPONSIBILITY

A. Conduct air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed. Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours collection, and shall be available for review until the job is complete.

3.10 AIR SAMPLING SCHEDULE

a. At a minimum, air sampling by the East Hartford Public Schools's Project Monitor will be conducted in accordance with the following schedule:

Abatement Activity	Pre-Abatement	During Abatement	Post Abatement
Greater than 160 s.f./260 l.f.	PCM	PCM	TEM
Tent and Glovebag Procedures	PCM	PCM	PCM

B. Frequency and duration of the air sampling during abatement will be representative of the actual conditions during the abatement. The size of the asbestos project will be a factor in the number of samples required to monitor the abatement activities. In addition to OSHA compliance monitoring (personal sampling accomplished by the Contractor) the following minimum schedule of samples will be required:

1. Background Samples:

   a. Outside of Work Area - 2.
   b. Work Area - 3

2. During Abatement:

   a. Outside of building at the exhaust of air filtering device – 1 per shift.
   b. Work Area – 1 per shift.
   c. Adjacent to Work Area - 1 per shift.
   d. Outside of the Equipment Decontamination Enclosure System - 1 during removal of ACM waste.

3. Post-Abatement:

    a. Work Area - At least five (5) per homogenous work site

C. Post-abatement clearance air monitoring requirements are as follows:

1. Air sampling will not begin until at least 12 hours after wet cleaning has been completed and no visible water or condensation remain.

2. Sampling equipment will be placed at random around the Work Area.

3. The representative samplers placed outside the Work Area but within the building will be located to avoid any air that might escape through the isolation barriers and will be approximately 50 feet from the entrance to the Work Area, and 25 feet from the isolation barriers.

4. The following aggressive air sampling procedures will be used within the Work Area during all air clearance monitoring:

    a. Before starting the sampling pumps, direct the exhaust from forced air equipment (such as a 1 horsepower leaf blower) against all walls, ceilings, floors, ledges and other surfaces in the Work Area. This should take at least 5 minutes per 1000 SF of floor area.

    b. Place a 20-inch fan in the center of the room. (Use one fan per 10,000 cubic feet of room space.) Place the fan on slow speed and point it toward the ceiling.

    c. Start the sampling pumps and sample for the required time.

    d. Turn off the pump and then the fan(s) when sampling is complete.

5. Air volumes taken for clearance sampling shall be sufficient to accurately determine (to a 95 percent probability) fiber concentrations to 0.010 f/cc of air.

6. Each homogeneous Work Area, which does not meet the clearance criteria, shall be thoroughly re-cleaned using HEPA vacuuming and/or wet cleaning, with the negative pressure ventilation system in operation. New samples shall be collected in the Work Area as described above. The process shall be repeated until the Work Area passes the test, with the **cost of repeat sampling being borne entirely by the Contractor. TRC has designed this project so that three (3) sets of TEM samples shall be required. The cost of any additional sets shall be borne by the Contractor.**

7. For an asbestos abatement project with more than one homogeneous Work Area, the release criterion shall be applied independently to each Work Area.

3.11 ACTION CRITERIA

A. If air samples collected outside of the Work Area during abatement activities indicate airborne fiber concentrations greater than original background levels or greater than 0.050 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Work Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Work Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. Replace floor tile

1. Provide new floor tiles in the areas where asbestos abatement occurred. Replace with similar tiles which are free of asbestos.

2. Prepare substrate surface, apply tile, and clean all surfaces and areas of work. If shot blaster is utilized during floor tile mastic abatement, use a leveling compound, wait for cure cycle and then apply tile. If chemicals are used for mastic removal, ensure that new mastic is compatible with any chemical residue so that new tiles will adhere.

1.2 SUBMITTALS

A. Submit manufacturer's product data and installation instructions.

B. Submit two sets of 4" x 4" square samples for each tile required. In each set of samples, show the full range of exposed color and texture to be expected in the completed work. Review will be for color and texture only. Contact owner regarding color.

1.3 REFERENCES

A. FS SS-T-312 - Tile Floor: Asphalt, Rubber Vinyl and Vinyl Composition.

1.4 GUARANTEE

A. The work under this Section shall be part of the Contractors standard one-year guarantee.

B. Defective work includes material or workmanship which results in warping, sagging, twisting, loss of adherence, within the time period of the guarantee.

1.5 PRODUCT HANDLING, DELIVERY AND STORAGE

A. Deliver materials to job site in original, unopened packages, bearing manufacturers name and label identifying each type of ceiling tile. Comply with manufacturers recommendations for storage of material.

B. Deliver two cartons of each color and pattern of floor material required for project, for maintenance use.(attic stock).

PART 2 PRODUCTS

2.1 MATERIALS - GENERAL

A. Vinyl Tile: Armstrong Standard Excelon Imperial Texture – No substitutes; Color as selected.

B. Cove Base: 4” conforming to FS SS-W-40 vinyl plastic.

C. Edge Strips: beveled type; smooth finish; matching color selected.

D. Sub-Floor Filler: leveling compound.

E. Primers and Adhesives: waterproof, of types recommended by resilient flooring manufacturer for specific materials.

F. Sealer and Wax: type recommended by resilient flooring material manufacturer for material type and location.

G. Manufacturers: materials of the following manufacturers are acceptable as applicable:

1. Armstrong

PART 3 EXECUTION

3.1 PREPARATION

A. Inspect site and examine existing condition.

B. Ensure floor surfaces are smooth and flat with maximum variation of 1/8" in 10 feet.

C. Ensure concrete floors are dry (maximum 7% moisture content) and exhibit negative alkalinity, carbonization or dusting.

D. Maintain maximum 70°F air temperature at flooring installation area for three days prior to, during and for 24 hours after installation.

E. Store flooring materials in area of application. Allow three days for materials to reach equal temperature as area.

F. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

G. Clean floor and apply, trowel and float filler to leave smooth, flat hard surface. Prohibit traffic until filler is cured.

3.2 INSTALLATION

A. Open floor tile cartons, enough to cover each area, and mix tile to ensure shade variations do not occur within any one area.

B. Clean substrate. Spread cement evenly in quantity recommended by manufacturer to ensure adhesion over entire area of installation. Spread only enough adhesive to permit installation of flooring before initial set.

C. Set flooring in place, press with heavy roller to ensure full adhesion.

D. Lay flooring with joints and seams parallel to building lines to produce minimum number of seams.

E. Install with minimum tile width □ full size at room or area perimeter, to square grid pattern with all joints aligned, with grain parallel for all units and parallel to length of room, unless otherwise indicated.

F. Terminate resilient flooring at center line of door openings where adjacent floor finish is dissimilar.

G. Install edge strips at unprotected or exposed edges where flooring terminates.

H. Scribe flooring to walls, columns, cabinets, floor outlets and other appurtenances to produce tight joints.

I. For installation of base, fit joints tight and vertical; install straight and level.

3.3 CLEANING AND PROTECTION

A. Prohibit traffic from floor finish for 48 hours after installation.

B. Remove excess adhesive from floor, base and wall surfaces without damage.

C. Clean, seal and wax floor and base surfaces in accordance with manufacturer's recommendations.

END OF SECTION

1.1 DESCRIPTION OF WORK

A. The work under this section shall include furnishing all labor, materials and equipment necessary to insulate pipes, pipe fittings and manifold within the work areas. Piping lines that have had insulation removed, or that has fallen off, or are new prior to this project, shall be re-insulated during this work. Contractor to verify extent of the above underlines and include in his estimate of work to be done prior to beginning any removal activities.

B. Re-insulate pipe with jacketed fiberglass of thickness and type as specified in Part 2, Materials. These replacement materials shall be professionally applied. All replacement material shall be applied and installed to meet with applicable building codes.

C. Re-insulate fittings with pre-molded polyvinyl chloride (PVC) with appropriate fiberglass insert material as recommended by the manufacturer.

D. Each Contractor shall visit job site to determine quantities, limitations, and restrictions of work area before submitting a bid.

1.2 SUBMITTALS

A. Submit piping insulation manufacturer's complete product data and installation instructions of all items proposed for use, with list of materials, locations and thickness for each use.

1.3 REFERENCES

A. ASTM C547 - Mineral Fiber Preformed Pipe Insulation

B. ASTM C553 - Mineral Fiber Blanket and Felt Insulation (Industrial Type)

C. ASTM E84, NFPA 255, UL 273 - Surface Burring Characteristics of Building Materials

1.4 GUARANTEE

A. The work under this Section shall be part of the Contractor's standard one-year guarantee.

1.5 PRODUCT HANDLING, DELIVERY AND STORAGE

A. All materials shall be delivered to job site prior to start of work in original unopened boxed or containers bearing appropriate manufacturer's label.

B. Materials damaged in delivery or storage shall be removed from job site.

PART 2 PRODUCTS

2.1 MATERIALS - GENERAL

A. Pipe and pipe fitting insulation, including components such as jackets, adhesives, sealant, and finishes shall be fire-resistant and fire-retardant and comply with NFPA 225, ASTM E84, UL 723 and ASHRAE STD 90A-1980. And not exceeding the following:

Flame - spread rating 25
Smoke - developed 50

B. Piping Insulation: New replacement glass fiber pipe insulation shall conform with the specified temperature ranges and thicknesses shown on the following table.

Pipe System	Pipe Size	Insulation Thickness
Domestic hot and cold water	□" - 2" 2" - up	1" 2"
Heating pipes	1" - 2" 2" - up	2" 2□"
Manifold		3"

fabricated insulation of the same thickness and conductivity as used on adjacent piping. Materials shall be Micro-Lok 650 as manufactured by Johns-Manville; fiberglass 25 ASJ/SSL as manufactured by Owens-Corning; 850 Snap-On as manufactured by Certain-Teed Corporation; or an approved equal. Insulation materials shall have an all-purpose vapor barrier fire retardant jacket.

D. Pre-formed rigid insulation shall have jacket of white kraft paper bonded to aluminum foil and reinforced with glass fibers with all service jacket exterior and self-sealing adhesive joints.

E. Manufacturers: Materials of the following manufacturers are acceptable as applicable:

1. Owens-Corning
2. Armstrong Corporation
3. Certain-Teed Corporation

4. Knauf Corporation
5. Johns-Manville

PART 3 EXECUTION

3.1 PREPARATION

A. This work shall proceed only after final air clearance is passed and cleanup is completed.

B. Install insulation only on clean dry surfaces and only after inspection and release for insulation application is granted.

3.2 INSTALLATION

A. Install all insulation according to manufacturer's instructions. All butt joints are to be tight and sealed with ASJ butt laps. Secure longitudinal seams with outward clinch staples or a suitable lap adhesive. Position lap down to avoid accumulation of dirt and moisture. When installing insulation, matching thickness takes priority over conductivity when placing partial sections of pipe insulation.

B. Fasten throats of fitting covers with stainless steel tacks. Use of steel staples to fasten covers is not acceptable. Seal seams and all overlaps of fitting covers to insulation jacket with PVC tape. Seal all exposed fiberglass ends with lagging mastic.

C. Completed work shall be smooth and straight. Fitting covers shall fit tight to pipe insulation with no gaps or fish mouths in throat seams or joints. Completed insulation work judged aesthetically unacceptable by the Design Consultant shall be corrected by the Contractor at no cost to the State.

D. Should insulation pass with piping through walls or floors, firestop opening around pipes using intumescent fire safing/caulking system. The rating of the firestops shall be equal to the time-rating of the floor or wall assembly in the path of the piping.

E. One exposed insulation, all longitudinal seams shall be kept at the top and back of the pipe and circumferential joints shall be kept to a minimum. Raw end of insulation shall be concealed by neatly folding the end of the jackets. Fittings, valve bodies and flanges shall be furnished with the same jacket materials used on adjoining insulation.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The work under this section will include the provisions for new boiler breeching insulation (except for short breeching stubs for boilers Nos. 1 and 3) and boiler insulation on boiler no. 2 only. Replacement work shall include furnishing all labor, materials and equipment necessary to re-insulate.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only:

1. Reference Standard, ANSI/ASTM:

C612	Mineral Fiber Block and Board Thermal Insulation
C195	Mineral Fiber Thermal Insulation Cement

2. Reference Standard, ASTM:

E84	Surface Burning, Characteristics of Building Materials

3. National Fire Protection Association (NFPA):

255	Surface Burning, Characteristics of Building Materials

4. Underwriter's Laboratories, Inc. (UL):

723	Tests for Surface Burning Characteristics of Building Materials

B. Insulation and Covering: Flame spread/smoke developed rating of 25/50 in accordance with ASTM E84, NFPA 255 and UL 723.

1.3 SUBMITTALS

A. Submit manufacturers' product data and installation instructions. Include project descriptions, list of materials, locations and thickness for each use.

1.4 DELIVERY AND STORAGE

A. Deliver all materials in original packages, containers or bundles with each bearing brand name, applicable standard designation, and name of manufacturer or supplier for whom the product is manufactured. Materials damaged in delivery or storage shall be removed from job site.

B. Store materials in a dry area with adequate ventilation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Insulation - Semi-Rigid, Board-Like Fiberglass:

1. Material shall comply with ASTM C411 - up to 850□F.

2. Thermal conductivity, .040 at 200□F.

3. Density 3.0 lb/ft^3, compressive strength, 125 lb/ft^2 at 10% deformation.

4. Burning characteristics (ASTM E84 smoke = 50, flame spread = 25).

5. New replacement fiberboard insulation shall conform with the thickness shown below:

Boiler Breeching	Total 3" thickness
Boiler	Total 3" thickness

B. Insulating Cement: ASTM C195, Hydraulic Setting Insulation Cement

C. Finishing Mastic: Vi-Cryl CP 10/11 Water-Based Mastic, Color White.

D. Wire Mesh: Corrosice-Resistant Metal; Hexagonal Pattern.

E. Adhesives, Sealant and Coating Compounds - compatible with insulation material. Meets MIL-A-3316B, Class I specification.

F. Manufacturers: Materials of the following manufacturers are acceptable as applicable:

1. U.S. Gypsum
2. Owens-Corning

3. Insulation Industries
4. Johns Manville
5. Certain-Teed

2.2 JACKETS

A. Interior Applications:

1. Canvas Jackets: UL listed treated cotton fabric, 6 oz./sq. yd.
2. Open Weave Glass Cloth: 8 oz/sq. yd.

PART 3 EXECUTION

3.1 PREPARATION

A. This work shall proceed only after final air clearance is passed and clean-up is completed.

3.2 INSTALLATION

A. The following guidelines are to be followed during thermal insulation installation:

1. Install all materials in accordance with manufacturer's instructions.

2. Re-insulate boiler and all other surfaces with a semi-rigid, board-like fiberglass such as Owens-Corning Fiberglass Insul-Quick which must withstand temperatures up to 850□F. Provide double layer application of insulation with overlap.

3. For fiberboard, cover with metal mesh.

4. Cover with a smoothing coat of insulating cement.

5. Embed canvas or open weave glass cloth in base coat of lagging adhesive overlapping joints at least 2". Smooth to achieve a uniform appearance.

6. Cover lagging cloth with finish coat of lagging adhesive to completely cover fabric and provide a smooth, hard surface.

7. Apply vinyl acrylic finish coat.

8. The finished work shall be perfectly smooth, completely bonded and free from delamination. Bumps, fishmouths, raw edges or any other

imperfections judged unacceptable by the Design Consultant shall be corrected by the Contractor at no cost to the Manchester Board of Education,

9. Do not insulate over nameplate or ASME stamps or access doors. Bevel and seal insulation around such.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The work under this section shall include furnishing all labor, materials and equipment necessary to reinstall flexible duct connector joints within the work areas as indicated.

B. Reinstall flex joints with woven neoprene coated connectors of type as specified in Part 2, Materials. These replacement materials shall be professionally applied. All replacement material shall be applied and installed to meet with applicable building codes.

C. Refer to Drawings for locations of flexible duct connectors. Each Contractor shall visit job site to determine quantities, limitations, and restrictions of work area before submitting a bid.

1.2 SUBMITTALS

A. Submit manufacturer's product data and installation instructions of all items proposed for use.

1.3 GUARANTEE

A. The work under this Section shall be part of the Contractor's standard one-year guarantee.

1.4 PRODUCT HANDLING, DELIVERY AND STORAGE

A. Deliver materials to job site in original, unopened packages, bearing manufacturer's name and label identifying each type of duct connector. Comply with manufacturer's recommendations for storage of material.

PART 2 PRODUCTS

2.1 MATERIALS - GENERAL

A. Closely woven, 30 oz. UL approved glass fabric, double coated with neoprene.

B. Fireretardent, waterproof, air tight, resistant to acids and grease, capable of withstanding 250 degrees Fahrenheit.

C. Approved manufacturers: Ventafabrics by Ventglass or Durodyne MFN.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install new flex joints following manufacturer's instructions.

B. Seal all ductwork where dismantled using duct sealing tape and mastic.

C. Contractor shall repair all ductwork buckled, misaligned, or otherwise damaged as a consequence of this work at no cost to the Owner.

END OF SECTION

ATTACHMENTS

DRAWINGS

ASBESTOS ABATEMENT AND RELATED WORK

SYNERGY ALTERNATIVE HIGH SCHOOL
40 BUTTERNUT DRIVE
EAST HARTFORD, CONNECTICUT

SDE PROJECT NUMBER 043-0239 CV
AUGUST 1, 2018

BUILDING OFFICIAL	FIRE MARSHAL
JAMES P. CORDIER HEALTH INSPECTOR	APPOINTED 504 OFFICIAL

TRC ENVIRONMENTAL CONSULTANTS
21 GRIFFIN RD NORTH
WINDSOR, CT 06095

INDEX OF DRAWINGS

NO.	TITLE
T-1	TITLE SHEET
ASB-001	ASBESTOS ABATEMENT AND RELATED WORK

STATE PROJECT NO 043-0239 CV

TRC
21 Griffin Road North
Windsor, CT 06095
(860) 298-9692

DESCRIPTION | DATE | BY

ASBESTOS ABATEMENT
SYNERGY ALTERNATIVE HIGH SCHOOL
TITLE SHEET
40 BUTTERNUT DRIVE
EAST HARTFORD, CONNECTICUT 06118

BH | REA | EP

NTS

AUGUST 1, 2018

T-1

GENERAL NOTES
ASBESTOS - REFER TO SECTION 02080

WORK AREA 1
REMOVE ACM IN THE FORM OF:
- **VAT AND MASTIC (ALL LAYERS)**
- **COVE BASE AND MASTIC**

UNDER CONTAINMENT WITH A PRESSURE DIFFERENTIAL AND CONTIGUOUS DECONTAMINATION UNITS. PERFORM WORK IN ACCORDANCE WITH CT. DPH APPROVED AWP. CASEWORK REMAINS. REMOVE CARPET WERE PRESENT. UTILIZE SHOT BLASTING OR A GRINDER EQUIPPED WITH A COWLING FOR MASTIC REMOVAL.

WORK AREA 2
REMOVE ACM IN THE FORM OF:
- **VAT AND MASTIC (ALL LAYERS)**
- **COVE BASE AND MASTIC**
- **MUDDED FITTINGS**
- **FLEX CONNECTORS**

UNDER CONTAINMENT WITH A PRESSURE DIFFERENTIAL AND CONTIGUOUS DECONTAMINATION UNITS. PERFORM WORK IN ACCORDANCE WITH CT. DPH APPROVED AWP. CASEWORK REMAINS. REMOVE CARPET WERE PRESENT. UTILIZE SHOT BLASTING OR A GRINDER EQUIPPED WITH A COWLING FOR MASTIC REMOVAL.

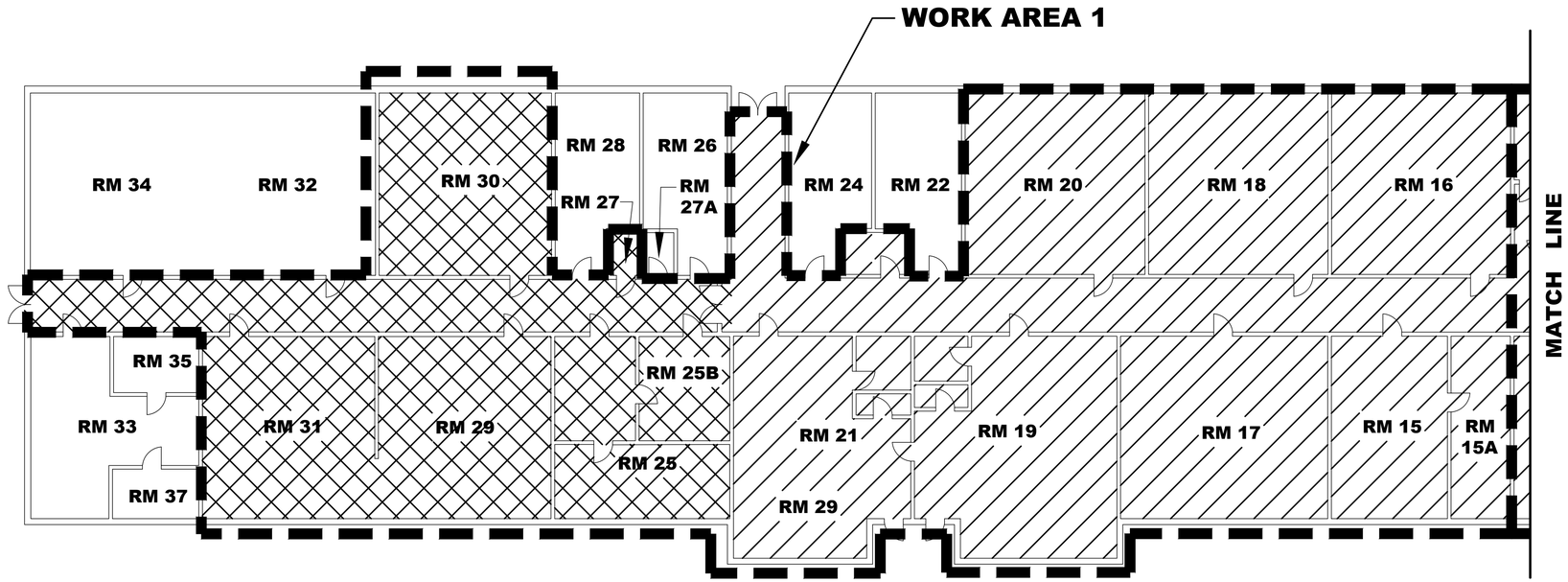
WORK AREA 3
REMOVE ACM IN THE FORM OF:
- **BOILER INSULATION**
- **BOILER BREECHING INSULATION**
- **MUDDED FITTINGS**

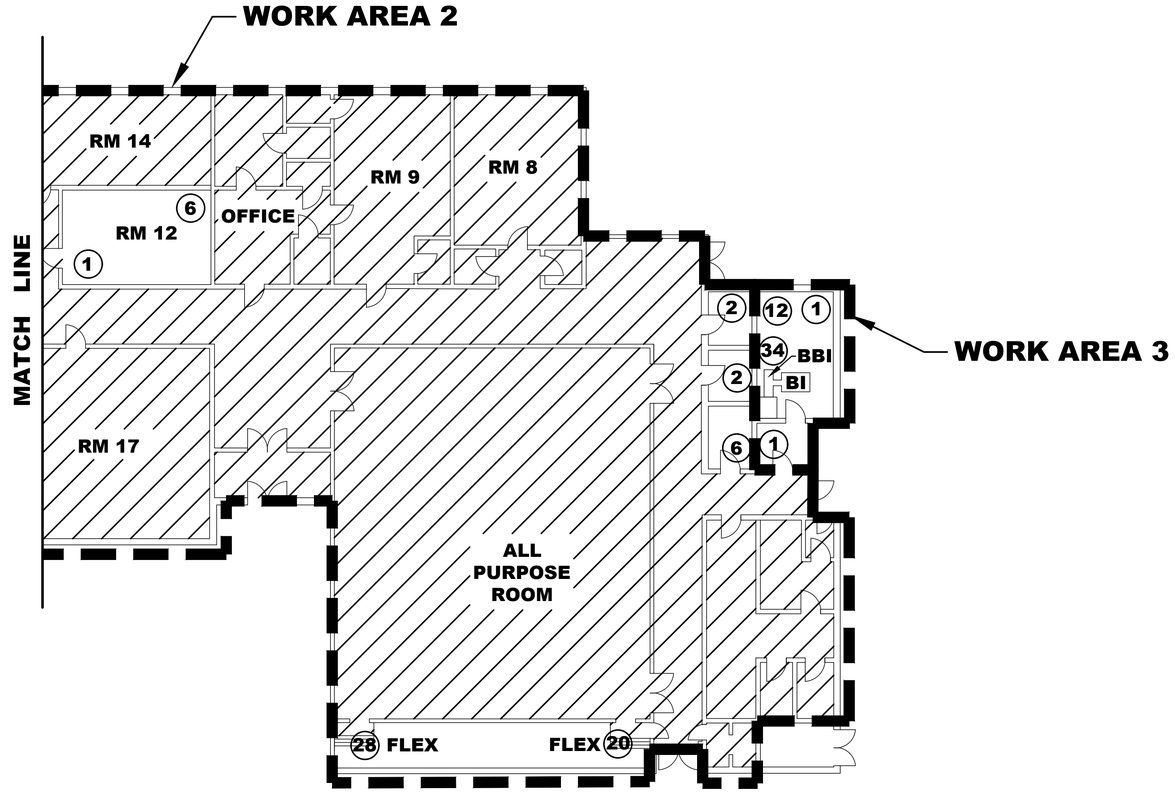
UNDER FULL CONTAINMENT WITH A PRESSURE DIFFERENTIAL AND CONTIGUOUS DECONTAMINATION UNITS.

NOTES:

1. ALL AREAS WHERE VAT, MASTIC, AND COVE BASE ARE TO BE ABATED SHALL HAVE NEW VINYL COMPOSITION TILE AND COVE BASE SUPPLIED & INSTALLED BY CONTRACTOR PER SPECIFICATIONS.

2. ALL MUD FITTINGS, INSULATION, AND CONNECTORS THAT ARE ABATED SHALL HAVE NEW SUPPLIED AND INSTALLED BY CONTRACTOR PER SPECIFICATIONS.





LEGEND OF SYMBOLS	
	VAT/MASTIC COVE BASE/MASTIC
	CARPET GLUED OVER VAT
#MF	NUMBER OF MUDDED FITTINGS
	WORK AREA DEMARCATION
FLEX	FLEX CONNECTOR
BI	BOILER INSULATION
BBI	BOILER BREECHING INSULATION

0 12' 24'
3/32" = 1'-0"

NORTH

STATE PROJECT NO. 043-0239 CV

TRC
21 Griffin Road North
Windsor, CT 06095
(860) 298-9692

DESCRIPTION	DATE	BY

ASBESTOS ABATEMENT
SYNERGY ALTERNATIVE HIGH SCHOOL
ASBESTOS ABATEMENT AND RELATED WORK
40 BUTTERNUT DRIVE
EAST HARTFORD, CONNECTICUT 06118

BR	REA	EP
DESIGNED	DRAWN	CHECKED

SCALE: 3/32" = 1'-0" ±
DATE: AUGUST 1, 2018
PROJECT NO.: 293648
DRAWING NO.: -
SHEET NO.: **ASB-001**