

**ASBESTOS ABATEMENT SPECIFICATIONS
(BASEMENT CRAWLSPACE)**

**WARREN TOWN LIBRARY
17 SACKETT HILL ROAD
WARREN, CT 06745**

Prepared For:

**Town of Warren
50 Cemetery Road
Warren, CT 06745**

Prepared By:



**2685 State Street
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SECTION 01010

GENERAL REQUIREMENTS

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.1 SECTION INCLUDES

- A. Contractor Qualifications.
- B. Contractor Use of Site and Premises.
- C. Work Sequence.
- D. Owner’s Operations.
- E. Closeout and Punch List.
- F. Cleaning.
- G. Emergency Calls

1.2 CONTRACTOR QUALIFICATIONS

- A. The Contractor selected must appear on the approved list of Asbestos Abatement Contractors on file at the State of Connecticut Department of Public Health (CTDPH). Only State-certified asbestos abatement supervisors and workers shall perform asbestos abatement work activities.
- B. Submit a written statement regarding whether the Contractor has ever been found out-of-compliance with federal or state asbestos regulations pertaining to worker protection, removal, transport, or disposal.
- C. The Contractor shall obtain and pay for all required permits, and prepare and file all original and amended local, state, and EPA pre-notification forms immediately following award of the work.
- D. The Contractor shall conduct personal exposure air monitoring for airborne fibers as prescribed by OSHA during the project performance.
- E. The Owner reserves the right to award this Contract to the Contractor who best meets all contractor qualifications and Owner’s interests.

1.3 CONTRACTORS USE OF SITE AND PREMISES

- A. Limit use of site and premises as follows:
 - 1. Owner occupancy.
 - 2. Work by Owner.
 - 3. Use of site and premises by public.
- B. Coordinate use of the premises, including use of restroom facilities and utilities under direction of Owner.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.

1.4 WORK SEQUENCE

- A. Work must be performed to accommodate Owner's requirements. Coordinate removal schedule and operations with the Owner/Consultant.
- B. The Owner will decide if the building is to remain open during abatement or closed provided the Owner has a time frame of the duration of the job. No children shall be occupying the building during the time of abatement.

1.5 OWNER'S OPERATIONS

- A. Schedule the Work to accommodate this requirement.
- B. Maintain means of egress.
- C. Coordinate Work with the Owner and the Fire Marshall.
- D. Maintain the fire alarm and fire detection systems at all times.
- E. Maintain a permanent means of egress during project. Provide and maintain a temporary means of egress as required by the Fire Marshall.

1.6 CLEANING

- A. Throughout the abatement period, the Contractor shall maintain the building and site free of rubbish, debris, surplus materials, and other items not required for the Work. Remove such materials from the site daily to prevent accumulations. Remove all debris from work areas, and remove all hazardous waste and asbestos waste as required by the most current federal, state, and local regulations and the requirements of the specifications.

1.7 EMERGENCY CALLS

- A. The Contractor shall provide the Consultant and Owner with a telephone number where the Contractor or Contractor's Representative can be reached during non-working hours.

- B. At the direction of a duly authorized representative of the Owner, the Contractor may be required to dispatch all necessary personnel and equipment to any point on the work site to clear obstructions or make safe any conditions deemed necessary by the Owner or Consultant.

1.8 ADDITIONAL GENERAL REQUIREMENTS

- A. The Abatement Contractor shall employ an English-speaking competent Asbestos Abatement Supervisor with at least three (3) years experience on projects of similar scope and magnitude who shall be responsible for all work involving asbestos abatement as described in the Specifications and defined in the applicable regulations, and have full-time daily supervision of the same. The Supervisor shall be the “Competent Person” as defined by OSHA regulations. The Contractor shall provide, on-site, at least one English-speaking foreman at all times when work is in progress. The supervisor and foreman must be thoroughly experienced in asbestos-containing materials removal work, knowledgeable of all applicable federal, state, and local regulations and capable of skillfully executing all work promptly, efficiently and in compliance with all requirements of these specifications. The Owner reserves the right to have any supervisory or foreman personnel removed from the project if they do not demonstrate the requisite qualifications.
- C. The Contractor shall allow work performed under this contract to be inspected, if required, by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.
- D. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- E. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, approval or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01016

SCHEDULING AND PHASING

PART 1 - GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.1 GENERAL REQUIREMENTS

- A. The Contractor shall present a working schedule to the Owner. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner will inform the Contractor of additions or changes in the scheduling requirements for the project.
- B. Refer to all other applicable sections of the specification for coordination with other trades. The Contractor shall coordinate work with all other activities at this occupied site.

1.2 TIME FOR COMPLETION AND WORKING HOURS

- A. Upon award of contract from the Owner, the Contractor shall immediately order materials, supplies, and components for the work of this project.
- B. The Contractor shall begin the work immediately upon receipt of the "Notice to Proceed" from the Owner. The date of the commencement of the work is termed the "Project Start Date." The Contractor will be required to complete all work of this Contract within the time period stipulated in the finalized schedule. The last day in the schedule is termed as "Contract Completion Date."
- C. If conditions arise that are beyond the control of the Contractor and force delays in the performance of the Work, the Owner shall immediately be notified. The Contractor shall state the reason for the delay and shall estimate the expected duration of the delay. Any application for an extension of the Contract completion date shall be made under proper change order procedures. The acceptance of the cause for delay and change order is subject to the Owner's review and approval.
- D. Work hours will be established in coordination with the Owner.
- E. Any extra hours or days per week worked by the Contractor or Sub-Contractors shall be at no extra cost to the Owner. Denial of extra hours or days per week by the Owner shall not be grounds for extra time allotted to the overall Contract time.
- F. The Contractor will define a project work schedule to which the Contractor will be bound. Any change in the work schedule must be approved by the Owner.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01026

UNIT PRICES

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.1 SUMMARY

- A. A unit price is an amount proposed by the Contractor and stated on the proposal as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the project Scope of Work is altered.
- B. Unit prices include material, any direct or indirect expenses of the Contractor or Sub-Contractor, profit, insurance, bonding, and any applicable taxes. The same unit price shall apply whether the work is added or deducted.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.1 GENERAL PROVISIONS

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

1.2 FINAL CLEANING

- A. Unless otherwise specified under Sections of this Specification, the Contractor shall perform final cleaning operations specified prior to final inspection.
- B. Maintain the project site free from accumulations of waste, debris and rubbish caused by operations. At the completion of the work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave the project clean and ready for work of others under separate contract.
- C. Cleaning shall include all surfaces, interior and exterior, in which the Contractor has had access.
- D. Use only those materials that will not create hazards to health or property.

1.3 REMOVAL CLOSEOUT DOCUMENTS

- A. Submit to the Owner, final completed copies of the Waste Shipment Records, signed by all transporters and the designated disposal site owner/operator.
- B. Submit to the Consultant copies of all Contractor's logs, notifications & permits, and all worker certifications (certificates, training, medical, and fit-test).
- C. The Contractor must be able to provide Certified Payroll documentation to the Town of Warren, or its Representative or Project Auditors upon formal request.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

DIVISION II

SPECIAL CONDITIONS

FOREWORD

Supplementing Division I of the Specifications for the work to be performed under this Contract, DIVISION II, SPECIAL CONDITIONS, shall apply particularly to this Contract.

The enforcement of the requirements of any of the Special Conditions shall not be construed as waiving any of the rights of the Owner, contained in any of the other provisions of the Contract.

The Contract documents, including without limitation, these Special Conditions, shall be interpreted and construed as far as is reasonably possible to be in addition to, supplementary to and consistent with each other.

SECTION 02075

SELECTIVE DEMOLITION - ASBESTOS REMOVAL

PART 1 – GENERAL

RELATED DOCUMENTS

The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.1 SUMMARY

- A. Provide selective demolition as necessary if directed by the Owner to access ACM containing TSI Insulation.
- B. All damaged ACM containing TSI Insulation and debris within the basement crawlspace is included in the base work; no extra change will be accepted.

1.2 PROJECT CONDITIONS

- A. Occupancy:
 - 1. Areas of the building in which selective demolition may occur will be unoccupied during work. All work will be performed only during a period when there are no children present in any parts of the building.
- B. Existing Conditions:
 - 1. After the project has begun, the Contractor is responsible for the condition of the structures to the area and surrounding areas.
 - 2. Unforeseen Conditions: Should unforeseen conditions be encountered that affect design or function of project, investigate and fully submit an accurate, detailed, written report to the office of the Owner. While awaiting a response, reschedule operations if necessary to avoid delay of the overall project.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that necessary utilities have been disconnected and sealed.
- B. As practicable, arrange operations to reveal unknown or concealed conditions for examination and verification before removal or demolition.
- C. Verify actual conditions to determine, in advance, whether removal or demolition of any element will result in structural deficiency, overloading, failure, or unplanned collapse.
 - 1. Owner shall disconnect electrical fixtures as necessary to facilitate removal of asbestos-containing materials.

3.2 PREPARATION

- A. Traffic:
 - 1. Do not obstruct walks or public ways without the written permission of governing authorities and of the Owner. Where routes are permitted to be closed, provide alternate routes, if required.
- B. Protection:
 - 1. Provide for the protection of persons passing around or through the area of demolition.
 - 2. Perform demolition so as to prevent damage to adjacent improvements and facilities to remain.
 - 3. Protect walls, floors, and other new or existing work from damage during demolition operations.

3.3 POLLUTION CONTROLS

- A. Control as much as practicable the spread of dust and dirt.
- B. Observe environmental regulations.
- C. Do not allow water usage that may result in freezing or flooding.
- D. Do not allow adjacent improvements to remain to become soiled by demolition operations.

3.4 DEMOLITION - GENERAL

Not Applicable.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. Promptly dispose of materials resulting from demolition operations. Non-contaminated material shall be disposed of as construction waste by the Contractor. Do not allow materials to accumulate on site.
- B. All rubbish and waste material from the Work shall be neatly stacked or kept in suitable containers and removed from the premises daily. The premises shall be kept clean and in an orderly condition at all times to the satisfaction of the Owner and the Consultant.
- C. Transport materials resulting from demolition operations and legally dispose of off-site.
- D. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

3.6 CLEANING

- A. Throughout the construction period, the Contractor shall maintain the building and site free of rubbish, debris, surplus materials, and other items not required for the Work. Remove such material from the site daily to prevent accumulations. Remove all construction debris from work areas, and remove all hazardous waste and asbestos waste, as required, by the most current federal, state, and local regulations and the requirements of the specifications.

END OF SECTION

SECTION 02080

ASBESTOS REMOVAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”
- B. Refer to other Sections of these Specifications to determine the type and extent of work therein affecting the work of this Section, whether or not such work is specifically mentioned herein.

1.2 SCOPE OF WORK

- A. Work outlined in this section includes all that is necessary for the cleanup/removal, encapsulation, and disposal of asbestos-containing materials (ACM) identified in the area as detailed below for The Warren Town Library.
- B. Coordinate this section with other Sections of these Specifications for actual quantities of work required. Location, estimated quantities, and abatement removal plan of specific items noted in paragraph A above include:

TABLE 1: LIST OF ACMs

MATERIAL	LOCATION	ESTIMATED QUANTITY
Pipe Insulation	Basement Crawlspace (On Pipes)	~200 LF
Pipe Insulation Pieces	Basement Crawlspace (Debris on Ground)	~100 LF Equivalent
Mudded Fitting Residuals	Basement Crawlspace (On Pipe Elbows and Fittings)	~ 20-30 fittings
Fine ACM Debris from Deteriorated Pipe Insulation and Mudded Fittings	Basement Crawlspace (On Ground)	Entire crawlspace

1.3 DEFINITIONS

The following definitions relative to asbestos removal:

1. ABATEMENT - Procedures to control fiber releases from asbestos containing materials; includes removal, encapsulation, and enclosure.
2. AIR MONITORING - The process of measuring the airborne fiber concentration within an area or within a person's breathing zone.
3. AMENDED WATER - Water to which a surfactant has been added.
4. ASBESTOS - The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically altered.
5. ASBESTOS PROJECT MONITOR (APM) - A professional capable of conducting air monitoring and analysis of samples for airborne fiber concentrations. This individual should be an industrial hygienist, an environmental scientist, or an engineer with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with 29 CFR 1910.1001 and 29 CFR 1926.1101.
6. ASBESTOS WORK AREA - A regulated area as defined by OSHA 29 CFR 1926.1101 where asbestos removal operations are performed which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated area for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.
7. ASBESTOS FELT - A product made by saturating felted asbestos with asphalt or other suitable binder, such as a synthetic elastomer.
8. ASBESTOS FIBERS - Those asbestos particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
9. ASPHALT SHINGLES, COMPOSITION SHINGLES OR STRIP SLATES - (Pitched Roof Shingle): a roofing material manufactured by saturating a dry felt with asphalt then coating the saturated felt with a harder asphalt mixed with a fine mineral, glass fiber, asbestos or organic stabilizer. All or part of the weather side may be covered with mineral granules, or with powdered talc or mica.
10. BASE FLASHING (ROOF) - The flashing provided by upturned edges of a watertight membrane on a roof. May contain metal and associated waterproofing material or combination of roofing felts and waterproofing at the joint between a roofing surface and a vertical surface such as a wall or parapet. Also base flashing may be present at perimeter of completely flat roofing.

11. BUILT-UP ROOFING - Composition Roofing, Felt and Gravel Roofing, Gravel Roofing) - a continuous roof covering made up of laminations or plies of saturated or coated roofing felts, alternated with layers of asphalt or coal-tar pitch and surfaced with gravel, paint or finish coat.
12. CAULKING - Resilient mastic compound often having a silicone bituminous or rubber base. Used to seal cracks, fill joints and prevent leakage. Typical applications: around windows and doors, at joints between two dissimilar materials. (i.e. masonry to wood, masonry to steel etc.).
13. CLEAN ROOM - An uncontaminated area or room, which is a part of the worker decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.
14. CLEARANCE SAMPLING - Final air sampling performed aggressively after the completion of the removal project in a regulated area. Clearance sampling can be conducted by either of the following two methods:
 - (A) Air samples collected by the air sampling professional having a fiber concentration of less than 0.01 fibers/cc of air in each of five (5) samples collected inside the containment will denote acceptable clearance sampling by Phase Contrast Microscopy (PCM).
 - (B) Five air samples collected inside the containment by the air sampling professional having an average asbestos concentration of less than 70 structures per square millimeter of air will denote acceptable clearance sampling for Transmission Electron Microscopy (TEM).
15. COMPETENT PERSON - As defined by 29 CFR 1926.1101, a representative of the Abatement Contractor who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure. In addition has authority to take prompt corrective measures to eliminate such hazards during asbestos removal. Competent person shall be properly trained in accordance with Environmental Protection Agency's (EPA) Model Accreditation Plan.
16. CURTAINED DOORWAY - A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of six feet apart can form an airlock.
17. DAMP PROOFING - Application of a water impervious material to surface such as wall to prevent penetration of moisture, typically at foundation or below grade surface.
18. DECONTAMINATION ENCLOSURE SYSTEM - A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.

19. ENCAPSULANT - A liquid material which can be applied to asbestos-containing materials which controls the possible release of asbestos fibers from the materials either by creating a membrane over the surface (bridging encapsulant) or penetrating the material and binding its components together (penetrating encapsulant).
20. EQUIPMENT ROOM - Any contaminated area or a room that is part of the worker decontamination enclosure with provisions for storage of contaminated clothing and equipment.
21. FIXED OBJECT - Unit of equipment or furniture in the work areas that cannot be removed from the work area.
22. FRIABLE ASBESTOS MATERIALS - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.
23. GLAZING COMPOUND - any compound used to hold window glass in place, also referred to as putty, or glaziers' putty. Is not field-applied, usually installed during manufacture of windows.
24. GLOVE BAG - A manufactured polyethylene bag type of enclosure with built-in gloves such as is placed with an airtight seal around asbestos-containing material and which permits the asbestos-containing materials contained by the bag to be removed without releasing asbestos fibers to the atmosphere. The use of glove bag is permitted for removal and repair of small amount (less than 3 linear feet/3 square feet) of ACM.
25. HEPA FILTER - High Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2-1979.
26. HEPA VACUUM EQUIPMENT - Vacuum equipment equipped with a HEPA filter system for filtering the effluent air from the unit.
27. MOVABLE OBJECT - Unit of equipment or furniture in the work area that can be removed from the work area.
28. NEGATIVE AIR PRESSURE EQUIPMENT - A portable local exhaust ventilation system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
29. NESHAPS - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.
30. PERMISSIBLE EXPOSURE LEVEL (PEL) - The average airborne concentration of asbestos fibers to which an employee is allowed to be exposed over an eight-hour period. The PEL established by OSHA 29 CFR 1926.1101 is 0.1 fibers per cubic centimeter of air averaged over an eight-hour time period. An airborne fiber concentration of 1.0 fibers /cc averaged over a sampling period of 30 minutes is the Excursion Limit. The Contractor is responsible for maintaining work areas in a manner that this standard is not exceeded.

31. REGULATED AREA - An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area within which airborne concentrations of asbestos fibers may exceed the PEL.
32. SHOWER ROOM - A room between the clean room and the equipment room in the work decontamination enclosure with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.
33. WATERPROOFING - material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water. Includes concealed conditions (applications around doors, windows, and in wall cavities), sometimes combined with felts.

1.4 SUBMITTALS

- A. The Contractor shall submit the following to the Owner prior to start of project:
 1. Evidence that the Contractor is certified to perform asbestos abatement work in the State of Connecticut.
 2. Schedule which defines a timetable for executing and completing the project, including set-up, removal, cleanup, decontamination, and air clearance sampling.
 3. The identity and licensing of the hauling contractor and the landfill to be used.
 4. Connecticut certificate of training (both initial and current refresher), current respirator fit test records, and current medical records for each employee who may be on the project site. Effective June 4, 2000, no individual shall provide services as an asbestos abatement site supervisor or as an asbestos abatement worker without a certificate to do so issued by the CTDPH.
 5. Detailed product information on all materials and equipment proposed for asbestos abatement removal on this project.
 6. Training and medical records for new employees to start work.
 7. Signed copy of the Certificate of Workers Acknowledgment found at the end of this section for each worker who is to be at job site.
- B. The following shall be submitted to the Owner at the completion of work:
 1. Completed Punch List.
 2. Completed copies of Waste Shipment Records (WSR).

1.5 REGULATIONS AND STANDARDS

- A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner which will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos removal. Specifically, the Contractor shall comply with the requirements of the following:
1. U.S. Environmental Protection Agency (USEPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR 61, Subpart M)
 2. Occupational Safety and Health Administration (OSHA) Asbestos Regulations (29 CFR 1910.1001 and 1926.1101)
 3. State of Connecticut Department of Public Health (CTDPH) Standards for Asbestos Abatement Sections 19a-332a-1 through 19a-332a-16 inclusive and Sections 20-440-1 through 20-440-9 inclusive
 4. State of Connecticut Department of Energy & Environmental Protection (CTDEEP) Regulations, Section 22a-209-8(i).
 5. Regulations of Connecticut State Agencies (RCSA) 22a-449(c) 100-119.
 6. Connecticut Basic Building Code (BOCA)
 7. National Fire Protection Association (NFPA) Life Safety Code
 8. Local health and safety codes, ordinances or regulations pertaining to asbestos abatement and all national codes and standards including Association for Standards of Testing and Materials (ASTM), American National Standards Institute (ANSI), and Underwriter's Laboratories (UL).
 9. Occupational Safety and Health Administration (OSHA) (29 CFR 1910 Subpart D) and (29 CFR 1926 Subpart M) Fall Protection.
 10. Toxic Substance Control Act: 40 CFR Parts 700-799 (TSCA).

1.6 EXEMPTIONS

- A. Any deviations from these Specifications require the written approval and authorization from the Owner and Consultant.
- B. Any deviation in work practices identified in CTDPH Standards for Asbestos Abatement, Sections 19a-332a-1 to 19a-332a-23, Sections 19a-333-1 through 19a-333-13, Sections 20-440-1 to 20-440-9, Section 20-441, and Section 19a-332e-1 to 19a-332e-2, must be requested in writing and approved in writing by the CTDPH.

1.7 FINAL VISUAL INSPECTION AND CLEARANCE AIR SAMPLING

- A. Following the completion of the final cleaning phase of the work in the regulated area, the Consultant shall conduct a final visual inspection of the area. The Contractor shall be responsible for meeting final visual criteria, which is the absence of visible debris, as specified in CTDPH regulation 19a-332a-12(b).

- B. Following the completion of the final visual inspection, and upon which time the Consultant agrees that the Contractor has met the final visual criteria, (and following encapsulation of the work area ceiling) the Consultant's Asbestos Project Monitor will collect post-removal air samples in the work area. The Owner shall be responsible for payment of the sampling and analysis of the first round of final air clearance.

1.8 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

- A. The Contractor shall make the following notification and provide submittals to the following agency prior to the commencement of removal work. This notification is required prior to the start of the abatement project:
 - 1. State of Connecticut
Department of Public Health
Indoor Air Program
410 Capitol Avenue
P.O. Box 340308
Hartford, CT 06134-0308

1.9 WORK SITE SAFETY PLAN

- A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:
 - 1. Evacuation of injured workers.
 - 2. Emergency and fire exit routes from all work areas.
 - 3. Emergency first aid treatment.
 - 4. Local telephone numbers for emergency services including ambulance, fire, and police.
 - 5. Methods to notify appropriate personnel in the event of a fire or other emergency requiring evacuation of the site or area.
 - 6. Site safety plan for fall protection.
- B. The Contractor is responsible for training all workers in these procedures.

1.10 CONTROL OVER REMOVAL WORK

- A. At the discretion of the Owner & Consultant, full-time project monitoring will be performed as part of this project throughout the duration.
- B. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:
 - 1. Non-essential personnel are prohibited from entering the area.
 - 2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" which are posted at the entry points to the enclosure system, and shall be equipped with properly fitted respirators and protective clothing.

3. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated.
4. Asbestos waste that is taken out of the work area must be properly bagged and labeled in accordance with these specifications. The surface of the bags shall be decontaminated. Asbestos waste leaving the enclosure system must be transported off site at end of work day or immediately placed in locked, posted temporary storage on site, and removed within 24 hours of the project conclusion. The Contractor may seek permission of the Owner to place a temporary lockable storage at a suitable onsite location.
5. Any material, equipment, or supplies that are brought out of the decontamination enclosure system shall be cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.

1.11 PROPER WORKER PROTECTION

- A. This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.
- B. All workers are to be accredited and certified as Asbestos Abatement Workers as required by the CTDPH.
- C. The Contractor is required to be certified, accredited, and licensed as required by the CTDPH.
- D. In accordance with 29 CFR 1926.1101, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include but is not limited to the following:
 1. Methods of recognizing asbestos.
 2. Health effects associated with asbestos.
 3. Relationship between smoking and asbestos in producing lung cancer.
 4. Nature of operations that could result in exposure to asbestos.
 5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
 - a. Engineering controls
 - b. Work practices
 - c. Respirators
 - d. Housekeeping procedures
 - e. Hygiene facilities
 - f. Protective clothing
 - g. Decontamination procedures
 - h. Emergency procedures
 - i. Waste disposal procedures
 6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134.
 7. Appropriate work practices for the work.
 8. Requirements of medical surveillance program.
 9. Review of 29 CFR 1926.

10. Pressure differential systems.
 11. Work practices including hands on or on-job training.
 12. Personal Decontamination procedures.
 13. Air monitoring, personal and area.
- E. The Contractor shall provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an eight-hour Time Weighted Average (TWA). In the absence of specific airborne fiber data, provide medical examinations for all workers who will enter the work area for any reason. Examination shall at a minimum meet OSHA requirements as set forth in 29 CFR 1926.1101. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.
- F. Submit the following to the Owner for review. The Contractor shall not start work until the Owner/Consultant reviews the submittals and indicates that they are acceptable.
1. Certificates from an EPA-approved Abatement Workers course for each worker as evidence that each Asbestos Abatement Worker is accredited. Evidence that the Contractor is certified to perform asbestos abatement work by the State of Connecticut Department of Public Health.
 3. An original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or enter the Work Area.
 4. Documents verifying that each worker has had a medical examination within the last 12 months as part of compliance with OSHA medical surveillance requirements. Submit, at a minimum, for each worker the following:
 - a. Name and Social Security Number.
 - b. Physicians Written Opinion from examining physician including at a minimum the following:
 - 1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
 - 2) Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
 - 3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
 5. Information that was provided to physician in compliance with 29 CFR 1926.1101.
 6. A statement that the worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat/cold stress in the worker.

1.12 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

- A. The Contractor shall be responsible for monitoring airborne asbestos fiber concentrations in the workers' breathing zones and to establish conditions and work procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001, and 1926.1101.

- B. The Contractor's air sampling procedures shall ensure proper documentation of all personal air-sampling results. Documentation for personal sampling must be available at the job site for review by federal and/or state regulatory agencies.
- C. All air sampling shall be conducted in accordance with methods described in OSHA Standards 29 CFR 1910.1001 and 1926.1101. The flow rate for air samples will not be less than 0.5 liters/minute and must not exceed 2.5 liters/minute.

1.13 RESTRICTIONS ON CONTRACTOR'S USE OF GROUNDS

- A. The Contractor shall confine his/her operations to the actual work site, access routes and storage areas designated by the Owner. The Contractor may place a storage container at a place designated by the Owner.
- B. The Contractor shall have sole responsibility for providing all materials, equipment, or tools and any storage required shall be at the Contractor's own risk. The Owner will not assume responsibility for any loss of materials, equipment, or tools stored on its property.

PART 2 - PRODUCTS

2.1 MATERIALS

- 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.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.
- C. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to the job site with factory label indicating 4 or 6 mil thickness.
- D. Polyethylene disposable bags shall be six (6) mil thick with pre-printed labels.
- E. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
- F. 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 of one (1) ounce surfactant to five (5) gallons of water or as directed by manufacturer.
- G. Encapsulant shall be non-flammable factory prepared penetrating encapsulant found acceptable to Consultant such as ABC Asbestos Binding Compound manufactured by Fiberlock. Usage shall be in accordance with manufacturer's printed technical data.

- H. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas where asbestos is present.
- I. Impermeable containers are to be used to receive and retain any asbestos- containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101) Containers must be both air and watertight.
- J. Labels and signs, as required by OSHA Standard 29 CFR 1926.1101 will be used.
- L. A high efficiency particulate air (HEPA)-filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where asbestos-containing materials may be disturbed.

2.2 TOOLS AND EQUIPMENT

- A. The Contractor shall provide all tools and equipment necessary for asbestos removal.
- B. The Contractor's air monitoring professional shall have air-monitoring equipment of type and quantity to monitor operations and conduct personal exposure monitoring per OSHA requirements.
- C. The Contractor shall have available sufficient inventory of dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape and air filters.
- D. The Contractor shall have available power cables or power sources such as generators (where required).
- E. As applicable, exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative pressure of at least 0.02 inches of water column within each enclosure with respect to outside areas. Equipment shall be checked for proper operation by differential pressure gauge continuously during the project. Adequate exhaust air shall be provided for a minimum of four (4) air changes per hour within the enclosure. No air movement system or air filtering equipment shall discharge unfiltered air outside, nor shall filtered air units be exhausted indoors from the work area.
- F. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.
- G. The Contractor will have reserve units so that the exhaust air filtration system will operate continuously.

2.3 ELECTRICAL

- A. Any electrical installations shall be accomplished under the direction of a Licensed Electrician.
- B. The Contractor shall furnish and install a portable ground fault circuit interrupters (GFCI) including the following:
 - 1. All circuits individually GFCI-protected.
 - 2. Components UL listed
- C. The Contractor shall not use existing electrical outlets within the regulated area:
- D. The Contractor will supply temporary lighting for all asbestos removal work areas.
- F. The Owner will furnish electrical power for the project.

PART 3 - EXECUTION

3.1 WORKER PROTECTION

- A. General:
 - 1. All asbestos abatement removal shall be performed in accordance with 29 CFR 1910.1001, 29 CFR 1926.1101 and State of Connecticut regulations as specified herein. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, chewing gum, or applying cosmetics shall not be permitted in the asbestos control area. Personnel of other trades not engaged in the removal of asbestos shall not be allowed in the work area unless all the personnel protection provisions of this Specification are complied with by the trade personnel.
 - 2. Engineering controls shall be used to minimize airborne fiber concentrations within the work area. A combination of personal protective equipment and work practices shall also be used to further reduce employee exposure to asbestos fibers.
 - 3. The Contractor shall provide all authorized visitors with protective clothing, as in the procedures described herein and afford them the use of all facilities to keep them free of contamination from asbestos fibers.
 - 4. The Contractor shall provide the decontamination facility for worker and equipment decontamination as well as the results of the personal air monitoring.

B. Respiratory Protection:

1. The Contractor shall select and provide at no cost to his/her employees respirators, which shall provide adequate protection to the employee as specified by Section 1910.1001(g) Table D-1 and Section 1926.1101(h) Table D-4.
2. Respiratory protection shall be worn by all persons potentially exposed to elevated airborne concentrations of asbestos fibers from the initiation of the asbestos removal project until all areas have been given clearance.
3. At a minimum, the Contractor shall provide half-face air-purifying respirators to all workers at the job site. If it is established, through collection and analysis of personal air samples in accordance with the OSHA Reference Method (ORM) (See U.S. Department of Labor; Occupational Safety and Health Administration; Occupational Exposure to Asbestos; Title 29 CFR 1910.1001, "General Industry Standard." Title 29 CFR 1926.1101, "Construction Standard") that this respiratory protection is inadequate, the Contractor will provide Powered Air Purifying Respirators or Type C (continuous flow or pressure demand) supplied air respirators.
 - a. Once the exposure limits have been established, the respirators presented in 29 CFR 1910.1001 that afford adequate protection at such upper concentrations of airborne asbestos fibers shall be used.
 - b. The minimum personal sampling period shall be seven hours at a flow rate of 0.5 to 2.5 liters per minute. The samples shall be collected within the workers' breathing zone. Personal sampling shall be the responsibility of the Contractor. Personal sampling results shall be available on site no later than 24 hours after sampling.
 - c. The filters provided for both the cartridge respirators and the PAPR's shall be National Institute for Occupational Safety and Health (NIOSH) approved for asbestos fibers.

C. Protective Clothing:

1. The Contractor shall provide to all workers, foreman and superintendents, protective disposable clothing consisting of full body coveralls including head covers.
2. The Contractor shall provide eye protection and hard hats, as required, by job conditions and safety regulations.
3. Reusable footwear, hard hats and eye protection devices shall be left in the "contaminated equipment room" until the end of the asbestos removal work.
4. Upon completion of asbestos removal work, the footwear shall be disposed of as contaminated waste or cleaned thoroughly inside and out using soap and water before removing from work area or from equipment and access area.
5. All disposable protective clothing shall be discarded and disposed of as asbestos waste when the wearer exits from the workspace to the outside through the decontamination facilities.

6. The color of the disposable clothing worn outside the work area shall be a different color than the disposable clothing worn inside the work area.

D. Decontamination Procedures:

1. Each worker and authorized visitor without exception shall, upon entering the job site: remove street clothes in the clean change room and put on an appropriate respirator with new filters, and clean disposable protective clothing before entering the equipment room or the work area, except that workers intending to re-wear previously worn protective clothing stored in the equipment room shall enter the equipment room wearing only respirators.
2. Each time he/she leaves the work area, each worker and authorized visitor shall:
 - a. Vacuum gross contamination from clothing before leaving the work area.
 - b. Proceed to the equipment room and remove all clothing except respirator.
 - c. Still wearing the respirator, proceed unclothed into the showers.
 - d. Clean the outside of the respirator with soap and water while showering.
 - e. Remove filters and wet them and dispose of filters in the container provided for that purpose.
 - f. Wash and rinse the inside of the respirator. After showering, dry off with disposable towels.
3. Following showering and drying off, each worker and authorized visitor shall proceed directly to the clean change room and dress in street clothes at the end of the day's work, or before eating, smoking, or drinking.
4. Contaminated reusable work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos removal work, footwear shall be disposed of as contaminated waste or cleaned inside and out using soap and water before removing these items from the work area or from the equipment and access area. Contaminated protective clothing shall be placed in receptacles for disposal with other asbestos-contaminated materials.

3.2 WORK AREA PREPARATION

- A. Shut down and/or isolate any heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure.
- B. Where necessary, within regulated areas, shut down electrical power, including receptacles and light fixtures. Under no circumstances during the removal process will existing lighting fixtures inside the regulated area be permitted to be operating. Provide GFCI devices and temporary lighting installed in compliance with the applicable electrical codes.

- C. Install decontamination system as described below in section 3.3 of these specifications.
- D. Pre-clean and seal off all openings, including, but not limited to, windows, corridors, doorways, ducts, grills, diffusers, and any other penetration of the work area, with polyethylene sheeting a minimum of six (6) mil thick, sealed with duct tape.
- E. Install adequate number of HEPA ventilation units to achieve the required number of at least 4 air changes per hour and exhaust units to the exterior of the building.

3.3 DECONTAMINATION SYSTEM

- A. The Contractor shall establish a decontamination enclosure (decon) contiguous to the work area consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas shall be through this decontamination enclosure.
- B. Access between rooms in the decontamination system shall be through double-flap curtained openings. The clean room, shower room and the equipment room within the decontamination enclosure shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.
- C. Construct the decontamination system with PVC or metal framing and cover all sides with a double layer of six (6) mil polyethylene sheeting, spray glued or taped at the joints.

3.4 MAINTENANCE OF THE WORK AREA

- A. Acceptance of Asbestos Control Area: The Contractor shall not begin removal unless approved by the APM. The control area must be constructed, the decontamination facility prepared and the supplies to be used assembled, barriers properly constructed, openings sealed, and other preparations made to allow the removal operation to proceed. If conditions are not acceptable, the Contractor shall correct deficiencies to comply with the specifications.

3.5 ASBESTOS REMOVAL PROCEDURE – GENERAL

- A. The Contractor shall have a designated "Competent Person" on the job at all times to ensure establishment of a proper enclosure system and proper work practices throughout project.
- B. Spray asbestos materials with amended water using airless spray equipment or apply approved removal wetting agent to reduce the release of fibers during removal operation.
- C. Fill disposal containers as removal proceeds, seal filled containers and wet clean each container thoroughly, double bag and apply caution label.
- D. 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. During this work, the surfaces being cleaned shall be kept wet.

- E. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decontamination enclosure at an appropriate time in the cleaning sequence. All asbestos waste shall be placed in 6-mil polyethylene disposal bags and shall be double bagged in the equipment decontamination enclosure before removal from the site.
- F. At any time during asbestos removal, should contamination of areas outside the work area be suspected, the Contractor shall cause all removal work to stop until the he/she takes steps to decontaminate these areas and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.
- G. After completion of the final cleaning procedure, an inspection shall be conducted by the Consultant APM. The inspection shall verify that ACM and residual dust has been removed from the work area.

3.6 ASBESTOS REMOVAL PROCEDURE – TSI

- A. Prior to entering, the decontamination system shall be erected at the entrance to the Boiler Room as described in section 3.3 above. The Boiler Room shall be designated as the “Regulated Area”.
- B. All workers shall don appropriate PPE before entering Boiler Room.
- C. Install critical barriers and HEPA ventilation units as directed in section 3.2 above.
- D. All work must be performed while HEPA ventilation units are in operation.
- E. Remove TSI debris from floor using the following procedure:
 - 1. Wet all materials with amended water or detergent solution so that entire surface is wet. Do not allow to puddle or run off to other areas.
 - 2. Keep materials continuously wet throughout removal operation. Continuously mist work area with amended water, or detergent solution.
 - 3. Shovel debris into disposal bag.
 - 4. Place bagged waste in a second disposal bag during decontamination, label and dispose of as asbestos waste.
- F. The Contractor shall then clean all moveable objects using HEPA vacuum equipment and wet cleaning methods as appropriate and remove such objects from work areas to a temporary location as assigned by the Owner. Porous items and any items that cannot be sufficiently cleaned must be disposed of as asbestos waste.
- G. Install drop cloth consisting of a minimum of 6-mil poly sheeting, to floor below area where ACM pipe insulation and or mudded fittings are present.

- H. Remove deteriorated TSI and mudded fittings using the following procedure:
 - 1. Wet materials with amended water or detergent solution so that entire surface is wet. Do not allow to run off to other areas. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions.
 - 2. Keep materials continuously wet throughout removal operation. Continuously mist work area with amended water or detergent solution. Wet any debris generated as necessary to keep continuously wet.
 - 3. Carefully cut/scrape loose wetted TSI and mudded fittings directly into waste bag. Do not allow material to fall to floor.
 - 4. Ensure all mudded fittings are clean with a brush to get materials out of the piping threads and fittings.
- I. Clean all fixed objects within the work area, using HEPA vacuum equipment and wet cleaning methods as appropriate.
- J. Clean the entire Basement Crawlpace using HEPA vacuum equipment and 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.
- K. Debris and Waste
 - 1. All waste must be kept wet during disposal.
 - 2. Asbestos materials should be removed directly into labeled disposal bags.
 - 3. Shovel any debris into disposal bag, or place directly in steel leak-tight drums.
 - 4. Place bagged waste in a second disposal bag during decontamination, label and dispose of as asbestos waste.
- L. Following all cleaning procedures and waste disposal, the APM shall perform a visual inspection of the Basement Crawlpace.
- M. Following successful completion of visual inspection, the Contractor shall apply bridging/penetrating encapsulant to entire area of ceiling where skim coat delaminated, ensuring that edges of intact skim coat are thoroughly coated.
- N. Following drying of the encapsulant, the APM shall collect air samples as directed in section 3.8 of these specifications.

3.7 CONSULTANT AND SUSPENSION OF WORK

- A. The Owner has designated FSS to perform the duties of the Asbestos Consultant for this Contract. The Consultant will also act as the APM for the project.

- B. The removal work shall be reviewed by the Consultant. The Contractor will request an inspection at least 24 hours in advance of requiring the inspection.
- C. The Consultant will recommend that the Owner order a suspension of work based on a determination of risk of adverse health and safety impacts on the environment, workers, or the general public, or failure to comply with the Specifications/regulations. The Contractor and the Owner will be notified in writing of the reason and of the recommended resolution.
- D. During the progress of the work, the Consultant, following approval by the Owner, shall have the right to make any changes, alterations, additions or omissions in the work or Specifications in accordance with the General Conditions.
- E. The Consultant will provide visual inspection services throughout the Contract's duration. It shall be the Contractor's responsibility to comply with pertinent work standards and regulations.
- F. The Consultant will conduct visual observations and perform inspections in the work area for evaluating that the work area remains properly secured and isolated and specified work items are properly completed. Upon completion of work in a defined work area, the Consultant will conduct a final visual inspection for the purpose of evaluating work completion. Unsatisfactory conditions shall be immediately corrected in a manner specified by the Consultant and the contract documents. Final payments shall be approved only after the Owner receives all properly completed Waste Shipment Record Forms and other required documentation and records.

3.8 CONSULTANTS' AIR SAMPLING RESPONSIBILITIES

- A. Air sampling may be conducted by the Consultant to ascertain the integrity of controls that protect the building from asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.
- B. Consultant's APM may collect air samples during the following time periods:
 - 1. Pre-Abatement Period: The APM may collect samples prior to abatement work to establish baseline readings. These samples will be collected in and around the proposed work areas. Pre-abatement air samples shall be collected as required to obtain a volume of 1,200 liters. Pre-abatement and during abatement Samples shall be analyzed by PCM methodology using the NIOSH 7400 protocol.
 - 2. Abatement Period: The APM may collect samples when onsite on a daily basis during the work period. A sufficient number of area samples shall be taken outside of the work area to judge the degree of cleanliness or contamination of the building during removal. Additional samples may be taken inside the work area at the discretion of the APM.

3. Post-Abatement Period: As required by regulation, the APM shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion, as established by the APM, has been met. Five (5) samples shall be collected inside the work area, five (5) outside the work area if Transmission Electron Microscopy (TEM) is required to meet regulatory standards, utilizing aggressive methods to comply with the State of Connecticut Department of Public Health Standards for Asbestos Abatement, sections 19a-332a-12, and 19a-332a-13 and United States Environmental Protection Agency (USEPA) Asbestos-Containing Materials in Schools regulation 40 CFR Part 763. Upon determination of final material amounts, analysis of the samples to determine airborne concentrations of asbestos shall be conducted by either Phase Contrast Microscopy (PCM) method or Transmission Electron Microscopy (TEM) to show that the concentration of fibers for each of the samples is less than or equal to a limit of quantitation for PCM - 0.01 fibers per cubic centimeter (0.01 f/cc) or TEM- 70 structures per square millimeter (70 s/mm²) of air in accordance with the above regulations.
- C. The APM shall provide ongoing evaluation of the air quality within the building during removal, using his/her best professional judgments with respect to the State of Connecticut Department of Public Health guideline of 0.010 fibers/cc and the background air quality established during the pre-abatement period.
- D. If the APM determines that the building air quality has become contaminated from the project, he/she shall immediately inform the Contractor to cease all removal operations and implement a work stoppage clean up procedure. The Contractor shall conduct a thorough cleanup of the areas of the building designated by the Consultant. No further removal work can take place until the APM has assessed that the building air has been decontaminated.
- E. Air samples shall be collected as required and shall be analyzed by either PCM methodology using the NIOSH 7400 protocol or TEM methodology following the AHERA 40 CFR Part 763 protocol.

3.9 CONSULTANT'S INSPECTION RESPONSIBILITIES

- A. Inspections shall be conducted by the APM as required, throughout the progress of the abatement project. Inspections shall be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the Contractor.
- B. The APM shall perform the following inspections during the course of abatement activities:
 1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the Contractor. The APM shall be informed sufficiently in advance of the time the inspection is needed. During the course of the pre-commencement inspection, the APM shall inspect the containment and surrounding work areas. This shall include, but not be limited to, inspection of barrier integrity, worker decontamination facility, utilization of power sources, and location and capacity of negative air filtration devices. If, during the course of the pre-commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order to obtain compliance.

2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Owner/Consultant. During the course of the work inspections, the APM shall observe the Contractor's removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.
3. Pre-sealant Final Visual Inspection. A pre-sealant inspection for the regulated area shall be conducted by the APM upon the request of the Contractor. The pre-sealant inspection shall be conducted after completion of the cleaning procedures. The pre-sealant inspection shall verify that no visible ACM or residual debris remain in the work area. If, during the course of the pre-sealant inspection, the APM identifies visible residual ACM or debris, the Contractor shall re-clean the work area until it is deemed acceptable by the APM.

3.10 WASTE DISPOSAL

- A. All waste material shall be promptly wetted and placed in 6-mil polyethylene bags or wrapped in two layers of 6-mil polyethylene plastic sheeting as it is generated. A sufficient number of waste bags and/or plastic sheeting shall be located in the immediate work area (unused bags in the equipment room of the decontamination facility must be disposed of as contaminated waste). The Contractor shall count or measure the volume of each filled container leaving the work area, and maintain a written record of such.
- B. Warning labels, having waterproof print and permanent adhesive, shall be affixed to the sides of all waste bags or transfer containers. Warning labels shall be conspicuous and legible, and contain the following words in accordance with OSHA 1926.1101:

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

In addition to the above, affix 'waste generator label' to include the generator's name and address on each waste container. Waste transport vehicles will have appropriate U.S. Department of Transportation signage on them for transportation of asbestos waste materials.

- C. A fine water spray shall be used to keep the unbagged or unwrapped waste wet at all times.
- D. Sealed waste shall be removed from the work area and stored in an on-site, enclosed and lockable dumpster or transported to the landfill. The temporary storage dumpster area shall be prominently identified and be kept locked.
- E. Once a truckload of waste containers has accumulated, the Contractor shall arrange for transportation to the landfill. No temporary co-mingling of asbestos waste from this project with that from another site will be allowed.
- F. Waste Transportation and Disposal Regulations:

1. It is the responsibility of the Contractor to determine and ensure compliance with the current waste handling regulations applicable to the work site and the current regulations for waste transportation to and disposal at each ultimate landfill. The Contractor shall comply fully with these regulations and with all U.S. Department of Transportation, EPA, and State of Connecticut Department of Environmental Protection (DEP) requirements.
2. If required, the Contractor (or Subcontractor), at no additional cost, shall maintain a valid hazardous waste transporter's permit and identification number, and document and fully comply with any hazardous waste manifesting requirements.

G. Waste Disposal Procedure:

1. The Contractor shall incorporate in his/her proposal the estimated quantity of asbestos waste disposal to be generated during the work; the proposed final waste site; the estimated number of separate waste shipments (loads), and the current estimated transportation and landfill disposal fees (per cubic yard). Non-contaminated waste transport and disposal shall be solely the Contractor's responsibility. The Contractor shall review each of these items and resolve any discrepancies or deficiencies during the pre-construction site meeting.
2. The Contractor shall package, label, and remove all asbestos waste as specified in the specifications. Packaging shall be accomplished in a manner that minimizes waste volume, but so that waste containers will not tear or break.
3. The Contractor shall provide legal transportation of this waste to the ultimate disposal landfill; and have the waste hauler and the landfill owner complete all other required manifests, dump slips, or other forms. The completed and fully signed (by all required parties) original of the Waste Shipment Record, and copies of the other forms, shall be returned within thirty (30) calendar days to the Consultant for payment approval. No payments will be approved, or made for incomplete Waste Shipment Records.
4. All disposal of asbestos-containing and/or asbestos-contaminated material must be in compliance with requirements of and authorized by the Solid Waste Management Division, State of Connecticut Department of Energy and Environmental Protection.

H. Waste Disposal Fees:

1. All Contractor contaminated waste handling costs, such as waste packaging, on-site/off-site storing/handling, transport/disposal, permitting, record keeping, and non-contaminated waste handling must be included in the Contractor's proposal as applicable to removal of asbestos materials and/or performance of the related removal activities.

3.11 PROJECT RESTORATION

A project walk-through shall be conducted, by the Owner or Owner's Consultant (upon the Owners request), after the removal portion of the project to identify areas or equipment damaged during the work. If the Owner determines that the damage is caused by acts or omissions of the Contractor, a punch list shall be developed. The Contractor shall be responsible for repair or replacement, or at the discretion of the Owner, payment for the work of another Contractor to complete the punch list. A second walk through shall be conducted after completion of punch list items.

END OF SECTION

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____ DATE _____
PROJECT ADDRESS _____
CONTRACTOR'S NAME _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. You must be given a copy of the written respiratory protection manual issued by your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:

- Physical characteristics of asbestos
- Health hazards associated with asbestos
- Respiratory protection
- Use of protective equipment
- Pressure Differential Systems
- Work practices including hands on or on-job training
- Personal decontamination procedures
- Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

By signing this document you are acknowledging only that the Owner of the building you are about to work in has advised you of your obligation for training and protection relative to your employer, the Contractor.

Signature _____

Social Security # _____

Printed

Name _____ Witness _____