

EXHIBIT A

DESCRIPTION OF GOODS & SERVICES AND ADDITIONAL TERMS & CONDITIONS

1. SCOPE

Services are for the abatement and removal of asbestos, lead, mold, and other hazardous materials as detailed in this Exhibit A and Attachments A-1 through A-6. Contractor(s) shall Perform multiple Service projects concurrently (if necessary) to include but not be limited to building rehabilitation projects and emergency projects requiring the commencement of Services within a 24 hour period of Client Agency notification.

All work to be performed by the Contractor must comply with, as a minimum, the Connecticut State Building Code as adopted pursuant to CGS 29-252, as amended; and the Connecticut Fire Safety Code as adopted pursuant to CGS 29-292, as amended.

The year of the code governing the Contractor's work will be the current code which has been adopted as per the above identified sections of the Connecticut General Statutes on the start date of the project.

2. PRICING

Pricing is fixed for the term of the Contract and is found in Exhibit B-1, B-2, B-3 and Exhibit B-4. No additional markup is allowed to Perform any work listed in the Exhibit B. The Contractor shall not charge for equipment items not listed in the Exhibit B Price Schedule without prior written approval from the Client Agency.

Escalation factors found in the Exhibit B Pricing Schedule have been predetermined and will be paid at the specified additional increment described. These predetermined variables will be multiplied by the applicable line item price if the line item Service being performed requires the additional description of work identified for that variable.

Markup for related materials and unspecified services shall be subject to the authorization of the Client Agency and shall not exceed three and one half percent (3.5%) above the Contractor' cost. The Client Agency at its discretion may elect to utilize any and all additional DAS Contracts for the purposes of obtaining unspecified material(s), Services and or equipment required for a specific project. In these instances, any and all price markup(s) described in this Contract shall not apply.

Rental rates for all equipment are to be computed at the job site only. Pricing will not include trip, travel time, delivery time charges, or any other miscellaneous charges pertaining to the rental of equipment.

Contractor(s) shall pay for all project permits, licenses, and fees, give all notices and comply with all laws, ordinances, rules and regulations of the State, city or town in which any required Services are to be Performed. The Client Agency will reimburse the Contractor for the permits, licenses or fees costs provided that the Contractor provide a receipt for such and a copy of the required permit, license or associated fee. No mark-up for these items is allowed. Requests for approval of supplemental unit prices must be made in writing to the Client Agency and the DAS Procurement

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Services Representative and must be accompanied by such additional information as the Client Agency may require to enable evaluation of the Contractor's request.

The Client Agency's representatives will monitor the use of all labor and equipment. If the Client Agency representatives determine that equipment is not being utilized, such equipment will not be paid for while remaining idle.

The Client Agency shall not pay for tools of the trade which include but are not limited to the following:

- reusable hand and small tools (e.g., screwdrivers, hammers, garden hoses)
- new, used and reusable protective clothing
- computer equipment and software including all costs relating to use of such equipment
- communication equipment, including but not limited to regular and cellular telephones, including all costs relating to the use of such equipment
- consumable supplies/equipment
- cost of routine cleaning of equipment
- monitoring equipment, e.g., PIDs and LEL/O2 Meters

3. CLIENT AGENCY USE OF CONTRACT

The scope of this Contract includes Services on a standard or specialized basis. The Client Agency will select a contractor in accordance with the selection procedures set forth below.

(a) Standard Contract Use

The Client Agency will request a work plan and cost estimate from the Contractor(s) based on the Exhibit B Prices for required Services. Contractors will then be required to submit a work plan and cost estimate that will accomplish the work task requested by the Client Agency. The Client Agency will have the right to provide comments and or other conditions to revise the selected Contractor's work plan. The Client Agency will evaluate each of the work plans and determine and select the Contractor with the best overall cost for the project

(b) Specialized Contract Use

The Client Agency will request a detailed work plan and cost estimate from a specific Contractor determined by the Client Agency to be the most qualified for a specific project type. The Client Agency may then select the specific Contractor based on the Contractors special expertise, project knowledge, past performance, availability and cost effectiveness.

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4. ADDITIONAL TERMS AND CONDITIONS:

(a) Contract Separately/Additional Savings Opportunities

DAS reserves the right to either seek additional discounts from the Contractor or to contract separately for a single purchase, if in the judgment of DAS, the quantity required is sufficiently large, to enable the State to realize a cost savings, over and above the prices set forth in Exhibit B, whether or not such a savings actually occurs.

(b) Mandatory Extension to State Entities

Contractor shall offer and extend the contract (including pricing, terms and conditions) to political sub-Divisions of the State (towns and municipalities), schools, and not-for-profit organizations.

(c) Energy Star Provision (per CGS 4a-67c)

Equipment and appliances offered pursuant to this contract shall meet or exceed the federal energy conservation standards set forth in the Energy Policy and Conversation Act, 42 USC 6295, any federal regulations adopted thereunder, and shall meet or exceed the federal Energy Star standards established by the U.S. Environmental Protection Agency and the U.S. Department of Energy.

(d) Subcontractors

DAS must approve any and all subcontractors utilized by the Contractor prior to any such subcontractor commencing any work. Contractor acknowledges that any work provided under the Contract to any state entity is work conducted on behalf of the State and that the Commissioner of DAS or his/her designee may communicate directly with any subcontractor as the State deems to be necessary or appropriate. Contractor shall be responsible for all payment of fees charged by the subcontractor(s). A performance evaluation of any subcontractor shall be provided promptly by the Contractor to DAS upon request.

Contractor must provide the majority of services described in the specifications.

(e) Prevailing Wages

Some or all of the Performance may be subject to prevailing wages. Accordingly, the following provision is included in this Contract in accordance with the requirements of Conn. Gen. Stat. Sec. 31-53(a):

The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of this section, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any Contractor who

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is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(f) Standard Wages

Contractors shall comply with all provisions of Connecticut General Statutes 31-57f, Standard Wage Rates for Certain Service Workers and shall pay wages in accordance with the current wage rates provided by the Department of Labor. Information regarding this Statute and how and when it applies can be obtained from DOL's web site at <http://www.ctdol.state.ct.us/wgwkstnd/standardwage.htm>. Questions concerning the provisions and implementation of this act should be referred to the Connecticut Department of Labor, Wage and Workplace Standards Division, 200 Folly Brook Blvd., Wethersfield, CT 06109-1114 (860) 263-6790 or his designated representative. A link to the Standard Wages is provided below.

Standard Wages: <http://www.ctdol.state.ct.us/wgwkstnd/prevaling-rates/service/rates-service.htm>

(g) Security and/or Property Entrance Policies and Procedures

Contractor shall adhere to established security and/or property entrance policies and procedures for each requesting Client Agency. It is the responsibility of each Contractor to understand and adhere to those policies and procedures prior to any attempt to enter any Client Agency premises for the purpose of carrying out the scope of work described in this Contract.

(h) Department of Correction Requirements for Contractors who Perform at a Correctional Facility

(1) Facility Admittance

- (A) Contractors shall not allow any of their employees to enter the grounds of or any structures in any Department of Correction ("DOC") facility ("Facility") or undertake any part of the Performance unless the employees shall have first been issued an individual, valid, security identification badge which they shall display properly at all times while at the Facility.
- (B) Contractor employees who seek admittance to a DOC Facility must first undergo a background check to confirm their eligibility to be admitted into the DOC Facility. Accordingly, Contractors must obtain from the DOC a form for each such employee and complete and submit that form to DOC at least 10 business days prior to the date that the employee is scheduled to arrive at the DOC Facility for the Performance. Information on the form includes the following:
 - 1. Name
 - 2. Date of Birth
 - 3. Social Security Number
 - 4. Driver's License Number

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5. Physical Characteristics (such as age, height, weight, etc.)

(2) Official Working Rules

Contractors shall adhere to the following Official Working Rules of the DOC:

- (A) All Contractors shall report to the Facility's security front desk for sign-in, regardless of work location, immediately upon arrival at the Facility.
- (B) All Contractor personnel shall work under the observation of an assigned correctional officer or supervisor, who will provide escort for the duration of the work.
- (C) No verbal or personal contact with any inmates.
- (D) Equipment will be checked daily and, when not in use, locked in a secure place as the Facility officials may direct.
- (E) Hacksaws, blades and files will remain in the custody of the officer assigned, except when actually being used.
- (F) The correctional officials may refuse admittance to any Contractor personnel for any cause the correctional officials deem to be sufficient.
- (G) In the event of any emergency, all Contractor personnel will be escorted outside the Facility by correctional officials.
- (H) Contractors shall address all questions pertaining to interruptions of service or to safety of the Facility to the appropriate correctional official.
- (I) Work at the Facility shall be carried on during the time between 8:00 a.m. and 12:00 Noon and between 12:30 p.m. and 4:30 p.m., the maximum allowable working day being 8 hours. The Contractor shall not Perform any work at any Facility on any Saturday, Sunday or Holiday, unless DOC determines, in its sole discretion, that there is an emergency.
- (J) The Contractor shall ensure that when all equipment is not in use, it will be unusable or be supervised to prevent use by inmates.
- (K) The Contractor shall supply to DOC a copy of all material safety data sheets for all products used in the process of construction, construction materials, and products brought onto the Facility.
- (L) All Contractors shall sign out at the Facility's security front desk prior to departure following completion of any work.

(3) Rules Concerning Department of Correction Facilities

Contractors shall adhere to the Facilities rules ("Facilities Rules") described in this section. At the time that Contractors and Contractor Parties seek to enter a Facility, DOC staff will present to them a document setting forth the following Facilities Rules and extracts of the laws governing the introduction and control of contraband. Contractors and Contractors Parties must read, understand and sign that document as a condition precedent to entering the Facility and as evidence that they understand the consequences imposed for violating these Facilities Rules:

(A) Restricted Areas

All persons except DOC personnel, upon entering the grounds are restricted to the immediate area of their work assignment. In order to go to other areas, Contractor personnel must first obtain written permission from the supervisory correctional official in charge. Only persons having official business will be admitted to construction sites.

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(B) Inmates

There may be times when inmates may be working adjacent to or in the same area as construction personnel. All persons are prohibited from accepting or giving anything from and to an inmate. Inmates are accountable to DOC personnel only, no other person shall have any conversation or dealings with inmates without the approval of the DOC supervisory official in charge.

(C) Vehicle Control

Any Contractor personnel entering upon the Facility shall remove the ignition keys of their vehicle and lock the vehicle when they leave it for any reason. Contractors shall ensure that all equipment in, on or around the vehicles is secured and inaccessible to anyone else while in the Facility.

(D) Contraband

Contractors shall not bring clothing or contraband into or onto the Facility's grounds or leave clothing or contraband in a vehicle located on the grounds of the Facility outside of an area designated by DOC personnel. Contraband is defined below and all persons are subject to these DOC Facilities Rules concerning contraband when on the Facility's grounds.

Contractor shall not introduce into or upon, take or send to or from, or attempt the same to or from, the grounds of the Facility anything whatsoever without the knowledge of the Facility supervisor.

“Contraband” means any tangible or intangible article whatsoever which DOC has not previously authorized and may include letters, stamps, tools, weapons, papers, floor implements, writing materials, messages (written and verbal), instruments and the like. Contractors shall discuss any questions regarding such matters with the Facility supervisor immediately upon those questions arising.

Cigarettes and Cell Phones are “contraband.” Accordingly, Contractors shall leave them secured inside their locked vehicles in an area designated by DOC personnel.

Failure to comply with these Facilities Rules, in the sole determination of DOC, will result in the Contractor being removed from the Facility.

(4) State Laws Governing Unauthorized Conveyance, Possession or Use of Items, Weapons and Certain Devices

(A) Unauthorized conveyance of certain items brought into the Facility is governed by Conn. Gen. Stat. Sec. 53a-174, which provides as follows:

1. Any person not authorized by law who conveys or passes or causes to be conveyed or passed, into any correctional or humane institution or the grounds or buildings thereof, or to any inmate of such an institution who is outside the premises thereof and known to the person so conveying or passing or causing such convey or passing to be such an inmate, any controlled drug, as defined in section 21a-240, any intoxicating liquors, any firearm, weapon, dangerous instruments or explosives of any kind, any United States currency, or any rope, ladder or other instrument or device for use in making, attempting or aiding an escape, shall be guilty of a class D felony. [Penalty for a Class “D” felony per Sec. 53a-35 subsection a, b, c, d is a term not to exceed five (5) years.]The unauthorized conveying, passing, or possessing of any rope or ladder or other

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instrument or device, adapted for use in making or aiding an escape, into any such institution or the grounds or building thereof, shall be presumptive evidence that it was so conveyed, passed or possessed for such use.

2. Any person not authorized by law who conveys into any such institution any letter or other missive which is intended for any person confined therein, or who conveys from within the enclosure to the outside of such institution any letter or other missive written or given by any person confined therein, shall be guilty of a class A misdemeanor. [Penalty for a Class "A" misdemeanor per Sec. 53a-36 subsection 1, the term is not to exceed one (1) year.]
 3. Any person or visitor who enters or attempts to enter a correctional institution or Facility by using a misleading or false name or title shall be guilty of a class A misdemeanor.
- (B) Possession of weapons or dangerous instruments in the Facility is governed by Conn. Gen. Stat. Sec.53a-174a, which provides as follows:
1. A person is guilty of possession of a weapon or dangerous instrument in a correctional institution when, being an inmate of such institution, he knowingly makes, conveys from place to place or has in his possession or under his control any firearm, weapon dangerous instrument, explosive, or any other substance or thing designed to kill, injure or disable.
 2. Possession of a weapon or dangerous instrument in a correctional institution is a class B felony. [Penalty for a Class "B" felony per Sec. 53a-35 subsection a, b, c, d is a term not to exceed twenty (20) years.]
- (C) Conveyance or use of electronic or wireless communication devices in the Facility is governed by Conn. Gen. Stat. Sec. 53a-174b, which provides as follows:
1. A person is guilty of conveyance or use of an electronic wireless communication device in a correctional institution when such person, without authorization by the Commissioner of Correction or the commissioner's designee, (1) conveys or possesses with intent to convey an electronic wireless communication device to any inmate of a correctional institution while such inmate is in such institution, or (2) uses an electronic wireless communication device to take a photographic or digital image in a correctional institution.
 2. Conveyance or use of an electronic wireless communication device in a correctional institution is a Class A misdemeanor.
- (i) **Badging Requirements for the Connecticut Airport Authority, Bradley International Airport (the Airport)**
- (1) All Contractor employees must pass all standard security requirements (based on activity and location) and pass prescribed driver training before entering Bradley International Airport or engaging in any part of the Performance.

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- (2) Contractors shall not allow any of their employees to enter the Airport or undertake any part of the Performance unless the employees shall have first been issued an individual, valid, security identification badge which they shall display properly at all times while at the Airport. The security badge will be issued upon the successful completion of a ten year (10) criminal history records check, and Transportation Security Administration Security Threat Assessment and a training/testing program – all administered by Airport personnel. The cost per person is \$50. This charge is subject to change during the term of the Contract. Persons with felony convictions will be evaluated on an individual basis. The Client Agency may, at any time during the term of the Contract and in its sole discretion, modify the criminal history records check, training, testing program, security and badge requirements. The Contractor shall comply with all such modifications.
- (3) The Contractor shall assign at least one individual, but no more than 3 individuals, to act as an Authorized Supervisor for the airport. Prior to starting Performance, Contractors shall direct the Authorized Supervisors to comply with all of the applicable terms and conditions of this Contract, including doing any and all things which the Authorized Supervisors deem to be necessary or appropriate to ensure full Performance.
- (4) Client Agency shall deliver to the Contractors a copy of the applicable requirements of all federal and state regulations governing aviation security activities prior to Contractors starting Performance. Contractors shall comply fully with all of those requirements and regulations and shall ensure the same for all of their employees who will perform in any way.
- (5) The duties of the Authorized Supervisor are to:
 - (A) read, understand and follow fully all of the requirements of all federal and state regulations governing aviation security activities;
 - (B) notify the security badging office or BDL Airport Operations **immediately** of all employee terminations and transfers in writing, which may include via e-mail.
 - (C) return to the security badging office or BDL Airport Operations a termination form with the terminated or transferred employee's security badge along with all other security-related items that had been issued to the employee, including, but not limited to, keys, gate cards and ramp stickers, no later than twenty-four (24) hours after the effective date of the termination or transfer. If the Authorized Supervisor fails to return timely the badge or other security related-item, the Authorized Supervisor shall submit a termination form no later than one (1) week after the effective date of the termination or transfer, along with a written explanation detailing the course of action that has been taken towards retrieving the outstanding item(s);
 - (D) limit the distribution of security related information only to persons with valid, Bradley International Airport security badges and as requested by the Airport Security Coordinator (ASC) or designated representative ;

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- (E) not presign badging applications and complete the entire Authorized Supervisor section of the badging application for all Contractors employees who will Perform under this Contract;
 - (F) report lost or stolen badges in writing immediately to the security badging office and/or Airport Operations on the standard lost/stolen security badge report.
- (6) Contractors shall ensure that the Authorized Supervisors read, understand and follow all of their prescribed such regulations and requirements. Accordingly, prior to starting Performance, and as a condition precedent to any of Contractors' employees being allowed to enter the Airport to Perform, Contractors shall deliver to the Client Agency a document signed by the Authorized Supervisors in the following form:

BRADLEY INTERNATIONAL AIRPORT AUTHORIZED SUPERVISOR'S ACKNOWLEDGMENT AND ACCEPTANCE OF DUTIES

I, _____, the undersigned, with regard to _____ activities at Bradley International Airport (BDL), accept the assignment as an Authorized Supervisor under a certain Contract between _____ and the State of Connecticut. I acknowledge and accept that as Authorized Supervisor under that Contract that my duties are to and I shall:

1. read, understand and follow fully all of the requirements of all federal and state regulations governing aviation security activities;
2. notify the security badging office or BDL Airport Operations **immediately** of all employee terminations and transfers in writing, which may include via e-mail.
3. return to the security badging office or BDL Airport Operations a termination form with the terminated or transferred employee's security badge along with all other security-related items that had been issued to the employee, including, but not limited to, keys, gate cards and ramp stickers, no later than twenty-four (24) hours after the effective date of the termination or transfer. If the Authorized Supervisor fails to return timely the badge or other security related-item, the Authorized Supervisor shall submit a termination form no later than one (1) week after the effective date of the termination or transfer, along with a written explanation detailing the course of action that has been taken towards retrieving the outstanding item(s) ;
4. limit the distribution of security related information only to persons with valid, Bradley International Airport security badges and as requested by the Airport Security Coordinator (ASC) or designated representative ;
5. not presign badging applications and complete the entire Authorized Supervisor section of the badging application for all Contractors employees who will Perform under this Contract; and
6. report lost or stolen badges in writing immediately to the security badging office and/or Airport Operations on the standard lost/stolen security badge report.

With my signature below I am verifying that I have received a copy of, and fully understand these requirements and my obligations and that I shall comply fully.

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_____ Company Name	_____ Signature of Authorized Supervisor	_____ Initials
_____ Company Mailing Address	_____ Print Full Name	
_____ City, State, Zip	_____ Title	
_____ Phone Number(s)	_____ Fax No.	_____ E-Mail Address

- (7) Contractors shall pay the Client Agency a fee of \$100 per unreturned badges for any terminated or transferred employee and reimburse the Client Agency, no later than thirty (30) days after receiving an invoice from the Client Agency, for any applicable federal or state amounts, penalties or both for which the Client Agency may be held responsible resulting from the Contractors' failure to follow fully all of the applicable federal and State regulations and other requirements concerning aviation security activities, including, by way of example, but not by way of limitation, \$100 per unreturned badges for any terminated or transferred employee and up to \$11,000 per occurrence for an individual employee's failure to comply with security regulations (including, by way of example, but not by way of limitation, failure to properly display security badge or failure to control access through a controlled access door with a proximity card reader). If Contractors fail to pay the fee or reimburse the Client Agency timely, the Client Agency may, in its sole discretion, demand, and the Contractors shall, return all of the security badges for all of the Contractors' employees. Consequently, DAS shall, at the Client Agency's request, terminate the Contract as to those Contractors. DAS and the Client Agency will take into account such Termination as an indication of Contractors' not being responsible in future leasing and contracting opportunities.
- (8) The Client Agency may suspend or terminate security privileges of individual employees pending investigation of any individual who is alleged to have violated any security regulations. Security privileges for the Contractor as an entity may also be suspended or terminated for failure to comply with all security regulations.

PART 1 - GENERAL

1.1 SCOPE

- A. The work specified herein shall include the abatement of hazardous 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 and an Asbestos Abatement Site Supervisor 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 Asbestos Contractor shall be licensed by the State of Connecticut in accordance with State of Connecticut Regulations, Sections 20-440-1 through 9 and 20-441. Should any portion of the work be subcontracted, the subcontractor must also be licensed in accordance with these regulations. Site supervisors and workers shall be certified in accordance with Sections 20-437 and 20-438 of the Connecticut General Statutes and Section 20-440-5 of the Regulations of Connecticut State Agencies. The licensing and certification requirements are available from the Environmental Health Services Division, Department of Public Health, 410 Capitol Avenue, P.O. Box 340308, Hartford, CT 06134-0308.
- C. The Owner will retain the services of a Project Monitor for protection of its interests and those using the building. Abatement monitoring will be conducted as deemed necessary.
- D. 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 Owner. The Contractor is responsible for protecting all objects in work areas that are permanent fixtures or too large to remove.
- E. 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 State 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.
 - 6. Provide OSHA required personal monitoring to ensure adequate respiratory protection for each worker.

- F. 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 Owner at no cost to the Owner.

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. A description of the scope of work will be attached to each individual project work order.

1.3 DEFINITIONS

- A. Accessible - A space easily accessed, and which can be entered or seen without demolition.
- B. Agency - The authoritative force, usually at the state level, or their representative.
- C. 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, accreditation of persons involved with asbestos, and final air clearances following abatement in public and private schools, and public and commercial buildings.
- D. Alternative Work Practice (AWP) - State of Connecticut Department of Public Health (DPH) approved deviation from Asbestos Standards (Sections 19a-332a-1 to 19a-332a-16 inclusive). Alternative Work Practice methods may be used if pre-approved by DPH or with the approval of DPH, the Design Consultant and State's Project Monitor when not pre-approved. Pre-approved Alternative Work Practice methods are included in Appendix A of this specification. Approval of alternative work practice procedures shall not relieve the Contractor from any codes, regulations or standards required by this specification.
- E. Asbestos Abatement Site Supervisor – Any individual who is employed or engaged by an asbestos contractor to supervise an asbestos abatement project.
- F. Asbestos-Containing Waste Materials - Mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovations operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.
- G. 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 "glove-bag."
- H. 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.

- I. Category I Non-Friable Asbestos-Containing Material (ACM) - Asbestos-containing packing, 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.
- J. 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.
- K. Class I Asbestos Work - Activities involving the removal of TSI and surfacing ACM and PACM.
- L. Class II Asbestos Work - Activities involving the removal of ACM, which is not thermal system insulation 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 mastic.
- M. Class III Asbestos Work - Repair and maintenance operations, where ACM, including thermal system and surfacing material, is likely to be disturbed.
- N. 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.
- O. Competent Person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the work place 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 specially trained in a training course which meet the criteria of 40 CFR 763 (Appendix C to Subpart E - Asbestos Model Accreditation Plan).
- P. Concealed Space - Space, which is out of sight. Examples of a concealed space include area above hard ceilings; below floors; between double walls; furred-in areas; pipe and duct shafts; and similar spaces which cannot be examined without invasive removal of building components or disturbance of finishes.
- Q. Critical Barrier - A layer 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.
- R. 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.
- S. DEP - The Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106.
- T. DPH - The Connecticut Department of Public Health, 410 Capitol Avenue, P.O. Box 340308, Hartford, CT 06134-0308.

- U. 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.
- V. Encapsulation - The treatment of asbestos-containing materials to prevent the release of fibers as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).
- W. Engineering Controls - Controls to include, but not be limited to, pressure differential equipment, decontamination enclosures, critical barriers and related procedures.
- X. 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.
- Y. Exposed - Open to view.
- Z. Fiber - A particulate form of asbestos five microns or longer, with a length-to-diameter ratio of at least 3 to 1.
- AA. Finished Space - Space used for habitation or occupancy where rough surfaces are plastered, paneled or otherwise treated to provide a pleasing appearance.
- BB. Fixed Critical Barrier - Barrier constructed of 2" x 4" wood or metal framing 16" O.C., with 1/2" 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.
- CC. Fixed Object - A piece of equipment or furniture in the Work Area, which cannot be removed from the Work Area, as, determined by the State.
- DD. Friable Asbestos-Containing Material (ACM) - Material containing more than one percent asbestos which has been applied on ceilings, walls, structural members, piping, duct work, or any other part of a building, which when dry may be crumbled, pulverized or reduced to powder by hand pressure. The term includes non-friable asbestos-containing material after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized or reduced to powder by hand pressure.
- EE. Friable Asbestos-Containing Building Material (ACBM) - Any friable ACM that is in or on interior structural members or other parts of a school or public or commercial building.
- FF. Glove-Bag Technique - A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contaminated work area. Information on glove-bag installation, equipment and supplies, and work practices is contained in 29 CFR 1926.1101. The glove-bag assembly is a manufactured or fabricated device consisting of a glove-bag (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 glove-bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. This

technique requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant, State's Project Monitor and DPH when not pre-approved.

- GG. 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.
- HH. Inaccessible - A space not accessible, and which cannot be entered or seen without demolition.
- II. Inspection - An activity undertaken in a school building, or a public or commercial building, to determine the presence or location, or to assess the condition of, friable or non-friable ACBM or suspected ACBM, whether by visual or physical examination, or by collecting samples of such materials.
- JJ. Lock-down - The procedure of spraying polyethylene sheeting and building materials with an encapsulant type sealant to seal in non-visible asbestos-containing residue.
- KK. Major Fiber Release Episode - Any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of more than 3 square or 3 linear feet of friable ACBM.
- LL. 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, State's Project Monitor and DPH when not pre-approved.
- MM. Minor Fiber Release Episode - Any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of 3 square or linear feet or less of friable ACBM.
- NN. Movable Object - A piece of equipment or furniture in the Work Area, which can be removed from the Work Area, as, determined by the State.
- OO. Negative Initial Exposure Assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101(f)(2)(iii) that employee exposure during an operation is expected to be consistently below the PEL.
- PP. 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.
- QQ. Owner or Operator of a Demolition or Renovation Activity - Any person who owns, leases, operates, controls or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls or supervises the demolition or renovation, or both.
- RR. Permissible Exposure Limits (PELS) - (1) Time-weighted Average Limit (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in

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

- SS. Pre-Clean - The process of cleaning an area before asbestos abatement activities begin to ensure all dust and debris in the area considered 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.
- TT. Presumed Asbestos-Containing Material - Thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 paragraph (k)(5).
- UU. Project Monitor - The certified and licensed individual contracted or employed by the building owner or 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 Department of Public Health Regulations (Sections 20-440-1 to 20-440-9 and 20-441). In addition to these requirements, this person shall be listed in the American Industrial Hygiene Association's Asbestos Analysts Registry.
- VV. 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 PEL.
- WW. 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.
- XX. 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 demolition.
- YY. Repair - Overhauling, rebuilding, reconstructing or reconditioning of structures or substrates where asbestos, tremolite, anthophyllite or actinolite is present.
- ZZ. Response Action - A method including removal, encapsulation, enclosure, repair and operation and maintenance that protect human health and the environment from friable ACBM.
- AAA. Small-Scale, Short Duration (SSSD) - Tasks such as but not limited to:
1. Removal of asbestos containing insulation on pipes.
 2. Removal of small quantities of asbestos-containing insulation on beams or above ceilings.
 3. Replacement of an asbestos-containing gasket on a valve.
 4. Installation or removal of a small section of drywall.

5. Installation of electrical conduits through or proximate to asbestos-containing materials.
 6. Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement.
 7. Removal of asbestos containing thermal system insulation not to exceed amounts greater than those which can be contained in a single glove-bag.
 8. Minor repairs to damaged thermal system insulation, which do not require removal.
 9. Repairs to a piece of asbestos-containing wallboard.
 10. Repairs involving encapsulation, enclosure, or removal, to small amounts of friable ACM only if required in the performance of emergency or routine maintenance activity and not intended solely as asbestos abatement. Such work may not exceed amounts greater than those may, which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work area, in order to perform its intended containment function.
- BBB. Spot Repair – Any asbestos abatement performed within a facility involving not more than three (3) linear feet or three (3) square feet of asbestos-containing material.
- CCC. 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.
- DDD. 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.
- EEE. 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.
- FFF. Waste Generator - Any owner or operator of a source whose act or process produces asbestos-containing waste material.
- GGG. 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.
- HHH. 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.
- III. 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 because of such asbestos abatement.
- JJJ. 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.

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 1926.21 - Safety Training and Education.
 - 29 CFR 1926.32 - Definitions.
 - 29 CFR 1926.51 - Sanitation.
 - 29 CFR 1926.55 - Gases, vapors, fumes, dusts, and mists.
 - 29 CFR 1926.59 - Hazard Communication.
 - 29 CFR 1926.62 – Lead Exposure 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 NESHA Revision; Final Rule.
 - 40 CFR 763, Subpart E - Asbestos School Hazard Emergency Response Act (ASHERA).
 - 40 CFR 763, Subpart G - Worker Protection Rule.
 - 40 CFR 763, Appendix C to Subpart E - Asbestos Model Accreditation Plan (MAP).
 3. State of Connecticut, Department of Public Health Regulations (DPH)
 - Section 19a-332a-1 through 19a-332a-16 - Standards for Asbestos Abatement.
 - Section 19a-333-1 through 19a-333-13 - Asbestos-Containing Materials in Schools Regulations.
 - Section 19a-332e-1 through 19a-332a-8 – Civil Penalties for Violation of Asbestos Abatement Laws.
 - Section 20-440-1 through 20-440-9 - Licensure and Training Requirements for Persons Engaged in Asbestos Abatement and Asbestos Consultation Services.

Section 20-441 – Refresher Training.

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 the Owner to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times.
- B. Manufacturer's Catalog Data:
 1. Local Exhaust Equipment
 2. Vacuum Equipment
 3. Respirators
 4. Pressure Differential Automatic Recording Instrument
 5. Surfactant
 6. Chemical Encapsulant
 7. Polyethylene Sheeting
 8. Airless Sprayers
 9. Portable Shower Units
 10. Adhesive Removal Chemicals
 11. MSDS for All Materials Delivered to the Site
 12. Letters of Compatibility for Encapsulants and Over coating Materials

C. Statements:

1. State Notification
2. Worker Medical Certification
3. Worker Training Certification
4. Worker Respirator Fit Testing
5. OSHA Laboratory Certification
6. Contractor's Project Monitor Certification
7. Landfill Approval
8. Safety Plan
9. Respirator Protection Plan
 - a. Initial Exposure Assessment
 - b. Copies of all required notifications, approvals and permits for the removal, disposal and transport asbestos-containing or contaminated materials.
 - c. 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
 - d. 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.
 - e. 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.
 - f. Qualifications of the person proposed for air sampling to assure workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. The Project Monitor shall be licensed by Connecticut DPH. Include the name and address of the testing laboratory proposed to perform air monitoring on behalf of the Contractor, along with their NIOSH PAT Program I.D. number.
 - g. 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.
 - h. Establish a written Respirator 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.

- i. Establish a written Hazard Communication Plan in accordance with 29 CFR 1910.1200(e) and 29 CFR 1926.59(e). This plan shall establish procedures describing how the facility will comply with the standard; describe how MSDS's will be obtained and made available for each hazardous chemical used in the work area; describe how information and training will be provided to employees; include a list of all toxic chemicals known to be present in the work place, cross-referenced to the MSDS file; explain how workers will be informed of hazards connected with non-routine tasks such as dealing with accidental spills and leaks; explain how workers will be informed of hazards associated with chemicals contained in unlabeled pipes; and, contain information on how other contract employees will be informed about hazards their employees may encounter while working in the facility.
- j. Demonstrate that employee's exposure will be below the PEL's. 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 PEL's, or otherwise makes a negative exposure assessment, the employer shall presume that employees are exposed in excess of the TWA and excursion limit.

D. Records:

- 1. Sign-in/out Logs
- 2. Personal Air Sampling Results
- 3. Waste Shipment Records
- 4. Pressure Differential Recording Data
- 5. NPE Inspection and Smoke Test Logs
- 6. Rental Equipment Statements
 - a. 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

1.6 PERSONNEL PROTECTION

- A. 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. 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.
- B. Minimum respiratory protection shall be as follows:

Airborne concentration of asbestos,
or conditions of use.

Required Respirator

Not in excess of 10 f/cc
(100 x 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 x PEL)	Full face piece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (>1000 x PEL) or unknown concentration	Full face piece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

- a. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.
 - b. A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 microns in diameter or larger.
- C. 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. Ensure all contaminated protective clothing remains in the Equipment Room for reuse or disposal of as contaminated waste.
- D. Ensure that all workers and authorized persons enter and leave the Asbestos Control Area through the Worker Decontamination Enclosure System.

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 Owner. Work shall be divided into convenient Work Areas, each of which is to be completed as a separate unit. 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 floor area (Phase) 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 Owner's Project Monitor for reoccupancy.
7. Rework activities as specified in other sections of this specification.
8. 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.

1.10 SCHOOL IN SESSION (SIS) REQUIREMENTS – GRADES K-12

- A. No asbestos removal activities are permitted during regular school hours unless approved by the Connecticut Department of Health.
- B. Asbestos removal shall be conducted in accordance with applicable DPH regulations and DPH Circular Letter EHS #2006-33.
- C. The abatement contractor shall provide the documentation included in paragraph 1.5.C to the Asbestos Project Designer 30 days prior to start of asbestos removal activities in each work area for submission in DPH SIS requests. No asbestos removal is permitted in an occupied school facility until approved by DPH.
- D. The Owners project monitor will conduct daily air sampling at prescribed locations throughout the project. Samples will be collected and read via phase contrast microscopy (PCM) twice per shift. All air samples in occupied areas shall be analyzed at the site prior to the end of the shift, by an analyst currently listed on the AIHA Asbestos Analysts registry and the Connecticut DPH Laboratory Certification Program. The results of the analysis of all samples shall be made available prior to return of students on the next day following the date of collection of the samples.
- E. If during asbestos abatement activities, any air sample analyzed by PCM is either overloaded with particulate or exceeds 0.010 f/cc or the background level, whichever is higher, the sample shall be analyzed by the NIOSH 7402 Transmission Electron Microscopy (TEM) method. Results of the analysis of the TEM samples shall be submitted to the DPH, the appropriate local Department of Health Agency and the Connecticut Technical High School System.
- F. If any air sample analyzed by NIOSH 7402 TEM method is either overloaded with particulate and cannot be analyzed or, if upon analysis the sample fiber concentration exceeds 0.005 f/cc, the area outside the established asbestos work area will be considered contaminated with asbestos. The Project Designer shall conduct an assessment of the contamination and the asbestos contractor shall re-establish engineering controls, isolation barriers, abatement work practices, etc. and clean the affected area. An area of the school evacuated due to air sampling data as described above shall not be occupied until: i) the area is cleaned via wet wipe

techniques using amended water and HEPA vacuum procedures by the asbestos contractor; and
ii) air sampling and analysis of the area satisfies the DPH criteria for re-occupancy.

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 [transparent] [opaque].
- C. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finish 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 40 CFR Part 61.152 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 may be clear or white.
- H. Glove-bag 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.
- I. Mastic removal chemicals shall be low odor, non-citrus based. Flash point shall be in excess of 140 deg. F.

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. Mechanical mastic removal equipment shall be suitable for the application.
- J. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.
- K. 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 GENERAL REQUIREMENTS FOR ASBESTOS ABATEMENT

- A. A Competent Person and Asbestos Abatement Site Supervisor shall be on the job at all times to ensure the establishment and maintenance of the NPE and proper work practices are followed through completion of the project.
- B. Containerize asbestos-containing waste material removed daily. Do not allow ACM to remain on the floor overnight, allowing it to dry out. Fill disposal containers (six (6) mil polyethylene bags or fiber drums) as removal proceeds, seal filled containers, and 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. Vinyl asbestos tile removed shall be bagged and placed in clean drums and sealed with locking ring tops. Wet clean each container thoroughly before moving to a holding area or to the waste storage container.
- C. If at any time during asbestos removal, should the 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.

3.2 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

- A. Prior to beginning work, the Owner Construction Administrator, Consultant and Contractor shall perform a visual survey of each Work Area and list all pre-existing damage to building components. The Contractor shall submit to the Construction Administrator a list, of pre-existing damaged areas.
- B. Post warning signs meeting the specifications of OSHA 29 CFR 1910.1001 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. Remove or 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 Owner.

- E. Provide temporary power and lighting 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.
- 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 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, 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 windows, doorways, skylights, ducts, grilles, diffusers, and any other 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 Owner.

3.3 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.

3.4 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 to ensure that no personnel enter or exit through this unit.

3.5 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. 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.

3.6 REMOVAL OF FRIABLE ASBESTOS MATERIAL

- A. Remove friable materials identified in accordance with the specific description of work to be accomplished.
- B. Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Polyethylene shall be applied alternately to floors and walls. Cover floors first, with a layer of six- (6) mil polyethylene sheeting, so that polyethylene extends at least twelve (12) inches up on walls. Cover walls with a layer of four- (4) mil polyethylene sheeting to twelve (12) inches beyond the wall floor intersection, thus overlapping the floor material by a minimum of twenty-four (24) inches. Repeat the process for the second layer of polyethylene. There shall be no seams in the plastic sheet at wall-to-floor joints.
- C. Removal of existing suspended ceilings, fluorescent light fixtures, and other ceiling mounted items that interfere with asbestos abatement shall be accomplished after engineering controls have been established. Fluorescent fixture components require special handling and disposal. Remove and recycle fluorescent lamps. Identify and separate PCB-containing and non-PCB-containing ballasts. Remove, handle, and dispose of PCB's in accordance with 40 CFR 761 and applicable federal, state, and local regulations. Unless labeled otherwise, all fluorescent light fixture ballasts are assumed to contain PCB's. Accomplish ballast removal within a contained area. Workers shall be trained in accordance with 29 CFR 1910.120 and shall wear appropriate personal protective equipment while removing PCB-containing ballasts from fixtures. Remove ballasts and wipe fixtures to remove PCB contamination or dispose of entire fixture as PCB contaminated. Ballasts and PCB contaminated rags and protective clothing shall be placed in appropriately labeled hazardous waste storage containers and destroyed in accordance with all

applicable regulations. Uncontaminated light fixtures may be disposed of as construction debris. Disposal of regulated components shall be in accordance with State and Federal regulations.

- D. Where non-ACM thermal systems insulation exists within the Work Area, decontaminate and protect non-ACM insulation material with two (2) layers of six (6)-mil polyethylene sheeting, or remove as asbestos contaminated.
- E. Spray friable materials with amended water, using airless spray equipment capable of providing a "mist" application to reduce the release of fibers during the removal operation. 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. 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.

3.7 REMOVAL OF NON-FRIABLE RESILIENT FLOORING AND ASSOCIATED MASTIC

- A. Resilient flooring shall be removed by approved methods, which minimize the release of asbestos fibers. Mastic may be removed by hand methods utilizing solvents or by mechanical means. Precaution shall be taken to prevent the leakage of contaminated liquids containing solvents to other areas of the building. Take immediate steps to clean up leaks and prevent future occurrences of the leak. Solvents shall be used in strict accordance with the manufacturer's written recommendations. Mechanical equipment may be used to remove flooring mastic. Ensure surfaces have been adequately wetted to prevent dust emissions prior to operation of mechanical mastic removal equipment.

3.8 REMOVAL OF NON-FRIABLE MISCELLANEOUS MATERIAL

- A. Non-friable miscellaneous materials shall be removed by approved methods, which minimize the release of asbestos fibers. Materials shall be wetted with amended water prior to removal. Double wrap ACM in 6-mil polyethylene sheeting and remove for disposal.

3.9 INTACT REMOVAL OF NON-FRIABLE MISCELLANEOUS MATERIAL

- A. Intact removal of non-friable asbestos-containing materials shall be accomplished by approved methods without release of asbestos fibers. Materials shall be wetted with amended water prior to removal. Double wrap removed ACM in 6-mil polyethylene sheeting and remove for disposal.
- B. Asbestos removal shall be conducted in accordance with applicable DPH regulations and DPH Circular Letter DEH #2003-10.

3.10 REMOVAL OF CONTAMINATED EARTH

- A. Remove all ACM gross debris and visible contamination from the top of soil. Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Polyethylene shall be applied alternately to floors and walls. Cover floors first with a layer of six- (6) mil polyethylene sheeting, so that polyethylene extends at least twelve (12) inches up on walls. Cover walls with a layer of four- (4) mil polyethylene sheeting to twelve (12) inches beyond the wall floor intersection, thus overlapping the floor material by a minimum of twenty-four (24) inches. Repeat the process for the second layer of polyethylene. There shall be no seams in the plastic sheet at wall-to-floor joints. Perform removal of ACM from all surfaces containing asbestos in the crawl space. After successful completion of a visual inspection, remove the polyethylene sheeting and place in disposal containers. Any debris which may have leaked behind the inner layer shall be removed by HEPA vacuuming. Remove soil to a depth of 2-inches, or to a depth as required by the Project Manager to remove ACM contamination. Apply a lock-down encapsulant to all surfaces within the Work Area from which asbestos has been removed.

3.11 REMOVAL OF EXTERIOR UNDERGROUND PIPE AND CONDUIT SYSTEM INTACT

- A. After excavating, to expose the top of the underground pipe system, remove by hand, earth from the sides of the pipe without disturbing the exterior. Construct a Negative Pressure Enclosure (NPE) system suitable for exterior service utilizing wood frame and plywood construction. Provide exhaust air filtration equipment to create a minimum of four air changes per hour and establish a negative pressure differential between the Work Area and the exterior of between 0.02 and 0.04 inches of water column. Remove pipe and conduit system containing ACM in sections cut to the maximum length feasible. At locations where the pipe systems are to be cut into sections, and where the sections are to be lifted, remove earth from the entire perimeter of the pipe conduit. Construct the NPE and establish a negative pressure differential between the Work Area and the exterior. Construct the containment of adequate size to remove a minimum of two linear feet of outer casing and underlying insulation prior to disturbing ACM. Utilize locations where field joints have been made during pipe system installation to the extent feasible. Remove the ACM casing and pipe insulation materials from around steam piping. Once the area has passed clearance testing and all controls established by this section have been removed cut the piping and remove the section from the trench using slings which will not damage the casing. Double wrap sections of pipe in 6-mil polyethylene sheeting and place in the waste storage container or transport vehicle.

3.12 REMOVAL OF EXTERIOR UNDERGROUND PIPE INSULATION

- A. After excavating to expose the top of the underground pipe system, remove by hand earth from the sides of the pipe without disturbing the insulation. Construct a Negative Pressure Enclosure (NPE) system suitable for exterior service utilizing wood frame and plywood construction. Provide exhaust air filtration equipment to create a minimum of four air changes per hour and establish a negative pressure differential between the Work Area and the exterior of between 0.02 and 0.04 inches of water column. Remove pipe and conduit system containing ACM in sections cut to the maximum length feasible. After excavating to expose the top of the pipe system, remove by hand earth from the sides of the pipe. Construct the NPE along the entire section of piping between manholes, and establish a negative pressure differential between the

Work Area and the exterior. Remove the pipe insulation and all asbestos-containing material, including contaminated earth from around piping as ACM.

3.13 REMOVAL OF WINDOWS FROM BUILDING EXTERIOR

- A. Cover floor surfaces with polyethylene sheeting sealed with tape. Polyethylene shall extend a minimum of 5-feet from walls. Cover ground surfaces with polyethylene sheeting sealed with tape. Polyethylene shall extend a minimum of 10-feet from building exterior. Install polyethylene sheet over the inside of the window opening and seal with tape.
- B. The windows are to be removed from the opening by hand methods to minimize damage, wrapped in two (2) layers of 6-mil polyethylene sheeting and taken off-site by the contractor for final cleaning prior to disposal and recycling. 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 residue (wire brushes are not permitted). During this work, the surfaces being cleaned shall be kept wet.

3.14 ALTERNATIVE WORK PRACTICE (AWP) PROCEDURES

- A. The procedures described in this specification are to be utilized at all times. Alternative work practice methods may be used if pre-approved by DPH. Should the Contractor desire to use alternative work practice procedures, which have not been pre-approved by DPH, submit in writing a description of the proposed methods to DPH, Design Consultant, and Owner's Project Monitor for approval.
- B. Alternative work practice (AWP) procedures shall provide equivalent or greater protection than the procedures that they replace. A DPH licensed asbestos project designer must submit in writing a description of the proposed methods to the Design Consultant for review. If the procedure is acceptable to the Design Consultant, an AWP application may then be forwarded to DPH for approval. Failure to secure AWP acceptance or approval shall not be a basis of a claim for additional compensation.
- C. The Contractor shall be responsible for all fees associated with filing Alternative Work Practice (AWP) applications, which have not been pre-approved. AWP applications must be submitted by Connecticut DPH licensed Project Designers.

3.15 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 Owner'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.

- 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. Wet wipe the walls beginning at the point farthest away from the negative air filtration units using cotton rags or lint free paper towels. Rags and towels shall be disposed of after each use. Workers should avoid the use of dirty rags to insure proper cleaning of surfaces. Mop the entire floor with a clean mop head and amended water. Water shall be changed frequently. Waste water shall be filtered using best available technology and dumped down an approved drain.
- F. A visual inspection of the Work Area by the licensed Project Monitor shall be conducted. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractors expense until the Standard of Cleanliness is achieved.
- G. Upon successful completion of the visual inspection, the Contractor shall encapsulate all abated surfaces.
- H. Once the lock-down encapsulant has sufficiently dried, air sampling for reoccupancy clearance shall be undertaken using aggressive sampling techniques. Analysis of clearance samples shall follow State of Connecticut Regulations, Section 19a-332a-12. 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 reoccupancy clearance, controls established by this specification may be removed.
- I. During breakdown of containment carefully remove the polyethylene barriers. Fold inward as the material is being removed, and place in leak-tight containers. Any debris which may have fallen behind the polyethylene sheeting shall be removed by HEPA vacuuming and/or wet cleaning. 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.

3.16 REOCCUPANCY CLEARANCE AIR SAMPLING

- A. Reoccupancy clearance air sampling will be conducted by the Project Monitor in accordance with the reoccupancy clearance criteria as set forth in the Regulations of Connecticut State Agencies, Section 19a-332a-12 or Section 19a-333-7 as applicable.
- B. Asbestos removal shall be conducted in accordance with applicable DPH regulations and DPH Circular Letter EHS #2010-48.
- 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. If the Work Area contains the number of rooms equivalent to the number of required samples based on floor area, a sampler shall be placed in each room. When the number of rooms is greater than the number of samples, a representative number of rooms will be selected.
 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 recleaned 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.
 7. For an asbestos abatement project with more than one homogeneous Work Area, the release criterion shall be applied independently to each Work Area.
- D. Continuous air sampling during construction will be conducted by the State's Project Monitor. Reoccupancy clearance testing will be in accordance with State of Connecticut DPH requirements. For window removal, a final visual inspection is to be performed to determine successful completion of all work associated with removal of windows

3.17 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 of receipt of results, and shall be available for review until the job is complete.

3.18 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 tape into place.
- E. A copy of the completed Waste Shipment Record shall be provided to the Owner.

3.19 REINSTALLATION OF DISPLACED EQUIPMENT

- A. After reoccupancy is granted, resecure 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.

3.20 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 0.010 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 02 82 00

PART 1 - GENERAL

1.1 SCOPE

- A. The work under this Section shall include furnishing all labor, materials and equipment necessary to install flexible connections at equipment connections to fixed ductwork following removal of existing flexible connections and successful air clearance test results.
- B. Contractor shall verify all locations where flexible connections are to be removed and replaced.

1.2 SUBMITTALS

- A. Contractor shall submit manufacturer's complete product data and installation instructions with list of materials, locations, and thickness for each use.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Closely woven, 30 oz. UL approved glass fabric, double coated with neoprene.
- B. Fire retardant, waterproof, air tight, resistant to acids and grease, capable of withstanding temperatures up to 250 degrees F.
- C. Materials shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less when tested in accordance with ASTM E84.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install new flexible duct connections following manufacturer's instructions and in accordance with Fig. 3-5 of the SMACNA Low Pressure Duct Standards.
- B. Seal all ductwork where dismantled using duct sealing tape and mastic. The Contractor shall repair all ductwork that is buckled, misaligned, or damaged as a result of this work at no additional cost to the Owner.

END OF SECTION 23 33 00

PART 1 - GENERAL**1.1 DESCRIPTION OF WORK**

- A. The work included under this section shall include furnishing all labor, materials and equipment necessary to insulate or re insulate all (including presently un-insulated but previously insulated) mechanical systems indicated.
- B. Insulation requirements shall be in accordance with the current edition of ASHRAE 90.1. Insulation shall consist of replacement with a non-asbestos-containing material of the thickness and type as specified herein.
- C. Installation of insulation materials shall include but is not limited to the following:
 - 1. Low Pressure Steam Piping.
 - 2. Steam Condensate Piping.
 - 3. Roof Drains.
 - 4. Domestic Cold Water Piping.
 - 5. Domestic Hot Water Piping.
 - 6. Chilled Water Piping.
 - 7. Hot Water Heating Supply and Return Piping.
 - 8. Mechanical Equipment.
 - 9. HVAC Equipment.
 - 10. HVAC Ductwork.
 - 11. Boiler Breeching

1.2 REFERENCES

- A. ASHRAE 90.1 – Energy Standards for Buildings Except Low-rise Residential Buildings.
- B. ASTM C547 - Mineral Fiber Preformed Pipe Insulation.
- C. ASTM C612 – Mineral Fiber Block and Board Thermal Insulation.
- D. ASTM E84 - Surface Burning Characteristics of Building Materials.
- E. ASTM E96 - Water Vapor Transmission of Materials.
- F. NFPA 255 - Surface Burning Characteristics of Building Materials.
- G. UL 723 - Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

- A. Submit manufacturer's technical product data and installation instructions for each insulation material and device proposed for use with a list of materials, locations and thickness for each use.
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1.4 QUALITY ASSURANCE

- A. Materials: Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84, NFPA 255, and UL 723.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Store insulation in original wrapping and protect from weather and construction traffic.
- C. Protect insulation against dirt, water, chemical, and mechanical damage.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastic, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 - PRODUCTS**2.1 GENERAL**

- A. Materials shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less when tested in accordance with ASTM E84.

2.2 GLASS FIBER PIPING INSULATION

- A. Fiberglass piping insulation shall conform to ASTM C547 and shall be pre-molded sectional rigid molded with a "k" of 0.24 at 75 degrees F mean temperature, thickness as specified in the Piping Insulation Thickness table. Insulation shall be jacketed with an double pressure-sensitive adhesive ASJ vapor retarder jacket having a water vapor permeance of 0.02 perms (maximum). Maximum service temperature 450 degrees F.

2.3 GLASS FIBER FITTING INSULATION

- A. Insulation for fittings, flanges, and valves shall be remolded PVC fitting covers with fiberglass insulation inserts of the same thickness and conductivity as used on adjacent piping. Maximum service temperature 450 degrees F. (insert, 150 degrees F PVC). PVC fitting covers shall be 30 mil.

2.4 DUCT INSULATION

- A. Flexible fiberglass duct insulation shall conform to ASTM C553 with 1 pcf density, with a "k" of 0.28 at 75 degrees F mean temperature, 1-1/2" thick. Insulation shall be jacketed with an FSK vapor retarder jacket having a water vapor permeance of 0.02 perms (maximum). Maximum service temperature 250 degrees
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- B. Rigid fiberglass duct insulation shall conform to ASTM C612 with 6 pcf density, with a "k" of 0.40 at 200 degrees F mean temperature, 1-1/2" thick. Insulation shall be jacketed with an FSK vapor retarder jacket having a permeance of 0.02 perms (maximum). Maximum service temperature 450 degrees F.

2.5 EQUIPMENT INSULATION

- A. Rigid fiberglass equipment insulation shall conform to ASTM C612 with 6 pcf density, with a "k" of 0.40 at 200 degrees F mean temperature, 2" thick. Insulation shall be jacketed with an ASJ vapor retarder jacket having a permeance of 0.02 perms (maximum). Maximum service temperature 450 degrees F.

2.6 BOILER BREECHING INSULATION

- A. Mineral rock wool conforming to ASTM C612 class 3, density 3.0 pounds pcf. Maximum service temperature 1200 degrees F.

2.7 ADHESIVES, SEALANTS, AND COATING COMPOUNDS

- A. Vapor barrier coating shall conform to MIL-A-3316, Class 1.

2.8 ANCHOR PINS

- A. Anchor pins and speed washers as recommended by the insulation manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials. Notify Agency if any leaks have been identified during construction activities prior to re-insulation.
- B. Verify that surfaces are clean, foreign material removed, and dry.

3.2 INSTALLATION

- A. Insulation thickness shall be in accordance with the current edition of ASHRAE 90.1. The insulation thickness identified in the insulation schedule is meant only as a guide and it is the responsibility of the contractor to comply with applicable codes at the time of the work.
 - B. Fiberglass Insulation:
 1. Install materials in accordance with manufacturer's instructions. Secure seams with pressure sensitive tape closure and butt joints with minimum 3-inch (76 mm) wide tape of same material as vapor barrier jacket.
 2. On exposed piping, locate insulation and cover seams in least visible locations.
 3. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations.
 4. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections and expansion joints.
 5. Apply vapor barrier coating to all exposed ends of insulation.
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- C. Insulation thicknesses for hot water systems are for systems operating to 200 F. LP steam is for temps from 200 to 250 F (15 psig). MP steam is for temps from 251 to 350 F (15 to 125 psig). HP steam is for temps from 351 and above (125 psig and above) Condensate is assuming maximum temp of 200 F.

3.3 INSULATION SCHEDULE

Per 2006 International Energy Conservation Code:

PIPING SYSTEM	PIPE SIZE (Inch)	THICKNESS (Inch)
Domestic Cold Water	All	1"
Domestic Hot Water	Up to 2"	1"
Domestic Hot Water	2 1/2" to 8"	2"
Domestic Hot Water Recirculating	All	1"
Horizontal Roof Drains	Up to 6"	1"
Horizontal Roof Drains	8" and over	1 1/2"
Hot Water Supply and Return	Up to 1 1/2"	1"
Hot Water Supply and Return	1 1/2" and over	2"
Low Pressure Steam(up to 15 psig)	Up to 2"	1 1/2"
Low Pressure Steam(up to 15 psig)	2 1/2" to 6"	3"
Low Pressure Steam(up to 15 psig)	8" and over	3 1/2"
Medium Pressure Steam(15 to 120 psig)	Up to 1"	2"
Medium Pressure Steam(15 to 120 psig)	1 1/4" to 4"	2 1/2"
Medium Pressure Steam(15 to 120 psig)	5" to 8"	3 1/2"
High Pressure Steam(125 psig and above)	Up to 2"	2 1/2"
High Pressure Steam(125 psig and above)	2 1/2" to 4"	3"
High Pressure Steam(125 psig and above)	5" to 8"	3 1/2"
Steam Condensate (Gravity and Pumped)	All	1 1/2"
Condensate Drain (copper pipe only)	All	1/2"
Flash Tank	All	3"
Chilled Water (40 F to 55 F)	Up to 1 1/2"	1"
Chilled Water (40 F to 55 F)	1 1/2" and over	1 1/2"
Hot Water Storage Tank	All	2"
Other Heating Equipment	All	2"
Boiler Breeching	All	3"

END OF SECTION 23 07 00

PART 1 - GENERAL

1.1 SCOPE

- A. The work specified herein shall be the removal of asbestos-containing roofing materials by persons who are knowledgeable, qualified, licensed, and trained in the removal, treatment, handling and disposal of asbestos-containing roofing material, and the subsequent cleaning of the affected environment. The Contractor shall have a Competent Person in control on the job site with authority to take prompt corrective measures at all times during roofing removal work. This person must comply with applicable Federal, State and Local regulations which mandate work practices, and be capable of performing the work of this contract.
- B. The Owner may retain the services of a Project Monitor for protection of its interests and those using the building. Area air sampling and visual inspection to ensure proper clean up of the work area will be conducted as deemed necessary.
- C. Deviations from the Specification require the written approval of the State of Connecticut.

1.2 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications
- B. A description of the scope of work will be attached to each individual project work order.

1.3 DEFINITIONS

- A. AGENCY - The authoritative force, usually at the state level, or their representative.
- B. ASBESTOS-CONTAINING MATERIAL (ACM) – Any material containing more than one percent asbestos.
- C. COMPETENT PERSON – In addition to the definition in 29 CFR 1926.32(f), one who is 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 specially trained in a training course which meets the criteria of EPA's Model Accreditation plan (40 CFR Part 763) for Supervisor, or its equivalent.
- D. HIGH-EFFICIENCY PARTICULATE AIR (HEPA) - A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles 0.3 microns in diameter.
- E. LEAK-TIGHT - Solids or liquids cannot escape or spill out. It also means dust-tight.

- F. REGULATED AREA - Area established by the Competent Person to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the Permissible Exposure Limit (PEL).
- G. NON-FRIABLE REGULATED ASBESTOS-CONTAINING MATERIAL - Means any material containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section I, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
- H. REGULATED ASBESTOS-CONTAINING MATERIAL (RACM) – means (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 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 regulated by this subpart.

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 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, Appendix C to Subpart E – Asbestos Model Accreditation Plan (MAP)
 - 3. State of Connecticut, Department of Public Health Regulations (DPH) Sections 19a-332a-1 Through 19a-332a-16 – Standards for Asbestos Abatement

1.5 SUBMITTALS AND NOTICES

- A. Prior to commencement of asbestos abatement work, submit to the A/E and Construction Coordinator and receive approval and/or acknowledgement of following:
 - 1. State notifications (when applicable)
 - 2. Asbestos worker medical clearance to wear a respirator documentation
 - 3. Asbestos worker & Competent Person training documentation
 - 4. Asbestos worker respiratory fit testing documentation
- B. Within 35 days following the date the asbestos waste trailer leaves the job site, submit to the A/E and DPW Construction Coordinator:
 - 1. Waste shipment record for disposal of asbestos roofing material

1.6 PERSONNEL PROTECTION

- A. Provide and require all workers to wear protective clothing and half face respirators when present in the Regulated Area established by the Competent Person.

1.7 WORKER TRAINING REQUIREMENTS

- A. Training for the Competent Person, Supervisor, and Workers shall meet the requirements of Federal and State regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene sheeting and disposal bags shall be six (6) mil.
- B. Labels and signs shall conform to applicable regulations.

2.2 TOOLS AND EQUIPMENT

- A. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance per OSHA requirements.
- B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.
- C. Waste Containers shall be lined with 2 layers of 6 mil polyethylene sheeting and 1 layer of polypropylene burlap.

PART 3 - EXECUTION

3.1 PREPARATION OF WORK AREA

- A. 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.
- B. Prior to start of work, and as needed during the job, the Competent Person shall inspect the work site and determine whether the roofing material is non-friable asbestos containing material and will likely remain non-friable asbestos containing material during removal activities.
- C. Shut down and seal (with duct tape and 6-mil. poly sheeting) windows & roof level heating and ventilation air intakes that are in position to entrain dust or vapors from the roofing activities. Coordinate shut down of mechanical systems with Owner personnel. Where intake shutdown is

not feasible (as determined by Owner), supply and install horizontal or vertical extensions to relocate the opening of the air intake outside or above the regulated area so as not to entrain dust and vapor emissions from the roofing and re-roofing activity.

3.2 ASBESTOS-CONTAINING ROOFING MATERIAL REMOVAL

- A. All work shall be performed in accordance with OSHA Construction Industry Standard (29 CFR 1926.1101) and EPA NESPHAP Standard (40 CFR 61) and applicable State of Connecticut Regulations.
- B. A Competent Person shall be on the job at all times to ensure proper work practices throughout the project.
- C. The Contractor shall utilize methods which do not sand, grind, cut or abrade the asbestos-containing roofing material. Should roofing materials be identified as regulated asbestos-containing material additional federal and state regulations shall apply.
- D. Pick up or HEPA vacuum asbestos-containing roofing debris from non-intact roofs prior to removal of the roofing. Bag debris for disposal.
- E. Utilize wet methods to remove asbestos-containing roofing materials unless such wet methods are not feasible or will create safety hazards, as determined and documented in writing by the competent person.
- F. HEPA vacuum asbestos-containing dust and debris left after the removal of asbestos-containing roofing. Where asbestos-containing built-up roofing is removed, HEPA vacuum the roof decking following roofing removal. Bag dust and debris for disposal.
- G. Remove asbestos-containing flashings and associated cements or mastics using manual methods (such as axe, knife, or shovel). Do not saw, sand, abrade or grind these materials.
- H. Asbestos-containing roofing material shall be carried or passed to the ground by hand or lowered to the ground by crane or hoist. Do not drop or throw asbestos-containing roofing material to the ground or into the dumpster. Transfer lowered asbestos-containing roofing material to the leak tight disposal dumpster carefully so as not to disperse dust.

3.3 DISPOSAL OF ASBESTOS-CONTAINING ROOFING MATERIAL

- 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. Asbestos warning signs must be attached to containers 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.
- C. Label containers of asbestos-containing waste material or wrapped asbestos-containing waste material using warning labels specified by OSHA 29 CFR 1926.1101. Label Asbestos-

containing waste material destined for off-site transport with the name of the waste generator and the location where the waste was generated.

3.4 CONTRACTOR PERSONAL AIR MONITORING RESPONSIBILITY

- A. Conduct air sampling to assure that workers are using appropriate respiratory protection in accordance with OSHA Construction Industry Standard 1926.1101. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours and shall be available for review until the job is complete.
- B. Produce a written initial asbestos exposure assessment prior to starting asbestos roofing removal work in compliance with OSHA Standard 1926.1101. Keep the exposure assessment on site for review by all concerned parties.

END OF SECTION 07 08 00

PART 1 - GENERAL

1.1 SCOPE

- A. Contractor shall meet the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3, and shall have a Competent Person in control on the job site at all times during work. This person must comply with applicable Federal, State and Local regulations which mandate work practices, and be capable of performing the work of this contract. The work specified herein shall be the performance of activities to control and eliminate lead-based paint hazards. These activities include; interim controls, abatement, and encapsulation of various materials containing or covered by lead-based paint
- B. The Owner will retain the services of a certified Inspector or Inspector Risk Assessor to monitor the work.
- C. 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 at no additional expense to the State. The Contractor is responsible for protecting all objects remaining in work areas that are permanent fixtures or too large to remove.
- D. The Contractor shall be responsible for the following general requirements:
 - 1. Obtain all notifications, approvals and permits required.
 - 2. Provide, erect, and maintain all staging, planking, bracing, shoring, barricades, and warning signs.
 - 3. Unless otherwise specified, all removed materials and debris shall become the property of the Contractor and shall be removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.
 - 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 State as to the storage location.
- E. 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 State at no cost to the State.

1.2 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on lead), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications.
 - B. The lead abatement work shall include the removal of lead-based paint, encapsulation of lead-based painted surfaces or stripping of building components containing lead-based paint as specified.
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- C. A project work order description shall be attached to each individual order identifying the scope of work and specific methods and procedures to be followed.
- D. For work that will disturb more than 6 square feet of interior lead based paint or more than 25 square feet of exterior lead based paint in a “child-occupied” structure, the following shall apply: The Contractor shall be certified under the Lead, Renovation, Repair, & Painting (RRP) rule issued by the United States Environmental Protection Agency on April 22, 2008. The Contractor shall follow specific work practice requirements of the RRP rule to prevent lead contamination during renovation, repair, and painting projects that disturb LBP in homes, child care facilities, and schools built before 1978. The Contractor shall have at least one “Certified Renovator” assigned to jobs where LBP is disturbed. **Note:** A child-occupied structure is one where a child under the age of 6 resides, including private residences, day care centers, and schools.

1.3 DEFINITIONS

Abatement - A measure or set of measures designed to permanently eliminate lead-based paint hazards or lead-based paint. Abatement strategies include the removal of lead-based paint, enclosure, encapsulation, replacement of building components coated with lead-based paint, removal of lead-contaminated dust, and removal of lead-contaminated soil or overlaying soil with a durable covering such as asphalt.

Action Level - Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) calculated as an eight hour time weighted average.

Abrasive Removal - A method of abatement that entails the removal of lead-based paint using mechanical removal equipment fitted with a high efficiency particulate air (HEPA) dust collection system.

Atomic Absorption Spectrophotometer (AA) - An instrument which measures the lead content in parts per million (ppm) using a lead source lamp and a flame capable of measuring the absorbed energy and converting it to concentration.

Biological Monitoring - The analysis of a person's blood to determine the level of lead contamination in the body.

Certified Renovator – An individual who is approved to carry out remodeling work practices described in the terms of the Lead, Renovation, Repair, & Painting (RRP) rule issued by the United States Environmental Protection Agency on April 22, 2008.

Chemical Removal - A method of abatement which entails the removal of lead-based paint using caustic or solvent based chemical paint strippers.

Competent Person - An individual who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

Complete Abatement - Abatement of all lead-based paint inside or outside a dwelling or building and reduction of any lead-contaminated dust or soil hazards. All of these strategies require

preparation; cleanup; post abatement clearance testing; record keeping; and, if applicable, reevaluation and on-going monitoring.

Deteriorated Paint - Paint that is peeling, flaking, chalking, scaling, or chipping ; paint that is over a defective or deteriorated substrate; or paint that is damaged in any manner such that a child can get paint from the damaged area. Deteriorated paint shall be classified as either in fair condition or poor condition.

Elevated blood lead level - A blood lead concentration as defined in Regulations of the State of Connecticut. A blood lead concentration equal to or greater than forty (40) micrograms per deciliter ($\mu\text{g}/\text{dl}$) as defined in OSHA Standard 1926.62.

Encapsulation - The resurfacing or covering of surfaces, and sealing or caulking with durable materials so as to prevent or control chalking or flaking of substances containing lead-based paint.

Enclosure - The use of rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the lead-based paint and the environment.

Engineering Controls - Measures implemented at the work site to contain, control, and/or otherwise reduce worker exposure to, and environmental releases of lead dust and debris.

Evaluation - Risk assessment, paint inspection, reevaluation, investigation, clearance examination, or risk assessment screen.

Fixed Object - A unit of equipment or furniture in the work area which cannot, as determined by the State, be removed from the work area.

Hazardous Waste: As defined in the Resource Conservation and Recovery Act (RCRA) the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity; concentration; or physical, chemical, or infectious characteristics may cause, or significantly contribute to increases in mortality, increase in serious and irreversible or incapacitating but reversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed. As defined in the regulations, solid waste is hazardous if it meets one of four conditions:

1. Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24),
2. Has been listed as hazardous (40 CFR Section 261.31 through 261.33),
3. Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste), or
4. Is not excluded from regulation as a hazardous waste.

Inspection - A surface-by surface investigation to determine the presence of lead-based paint (in some cases including dust and soil sampling) and a report of the results.

Inspector - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 to (1) perform inspections to determine and report the presence of lead-based paint on a surface-by-surface basis through on-site testing, (2) report the findings of such an inspection, (3) collect environmental

samples for laboratory analysis, (4) perform clearance testing, and (5) document successful compliance with lead-based paint hazard control requirements or standards.

Intact Surface - A defect-free surface with no loose, peeling, chipping, or flaking paint. Painted surfaces must be free from crumbling, cracking or falling plaster and must not have holes in them. Intact surfaces must not be damaged in any way.

Interim Controls - A set of measures designed to temporarily reduce human exposure or possible exposure to lead-based paint hazards. Such measures include specialized cleaning, repairs, maintenance painting, temporary containment, and management and resident education programs. Interim controls also include dust removal; paint film stabilization; treatment of friction and impact surfaces; installation of soil coverings, such as grass or sod; and land-use controls.

Lead Abatement Plan - A written plan that identifies the location of intact and defective lead-based paint and describes how defective lead-based surfaces will be abated and how the environment, health, and safety will be protected.

Lead-Based Paint - Paint or other surface coatings that contain lead equal to or greater than 1.0 milligrams of lead per square centimeter or greater than 0.5% by weight.

Lead-Based Paint Hazard - Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or deteriorated lead-based paint would have an adverse effect on human health. Lead-based paint hazards include for example, deteriorated lead-based paint, leaded dust levels above applicable standards, and bare leaded soil above applicable standards.

Lead-Based Paint Hazard Control - Activities to control and eliminate lead-based paint hazards, including interim controls, abatement, and complete abatement.

Lead-Based Paint Abatement Planner/ Designer - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 for planning and designing lead-based paint abatement projects.

Lead Consultant - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 to perform as an inspector, risk assessor or planner/designer

Lead Control Area - An area where lead abatement operations are performed where airborne concentrations of lead dust exceed or can reasonably be expected to exceed the permissible exposure limit. The lead control area is isolated by physical boundaries from occupied areas to prevent the spread of lead dust, paint chips, debris, and unauthorized entry of personnel.

Lead-Free Dwelling - A lead-free dwelling contains no lead-based painted surfaces and has interior dust and exterior soil lead levels below the applicable CT DPH, HUD and EPA standards.

Lead Hazard Screen - A means of determining whether residences in good condition should have a full risk assessment. Also called a risk assessment screen.

Lead-Safe Dwelling - A lead-safe dwelling contains intact, or encapsulated lead-based paint and has interior dust and exterior soil lead levels below the applicable CT DPH, HUD and EPA standards.

Manifest - The shipping document (EPA Form 8700-22 or a comparable form required by the State or locality) used for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transport from the point of generation to the point of treatment, storage, or disposal.

Paint Film Stabilization - The process of wet scraping, priming, and repainting surfaces coated with deteriorated lead-based paint; paint film stabilization includes cleanup and clearance.

Paint Removal - An abatement strategy that entails the removal of lead-based paint from surfaces. For lead hazard control work, this can mean using chemicals, heat guns below 700 degrees Fahrenheit, and certain contained abrasive methods. Open flame burning, open abrasive blasting, sand blasting, water blasting and extensive dry scraping are prohibited paint removal methods.

Permissible Exposure Limit (PEL) - Fifty (50) micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of air averaged over an 8 hour period as determined by 29 CFR 1926.62.

Personal Monitoring - Sampling of lead concentrations within the breathing zone of a worker to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employee's work tasks.

Reevaluation - In lead hazard control work the combination of a visual assessment, and collection of environmental samples performed by a certified risk assessor to determine if a previously implemented lead-based paint hazard control measure is still effective and if the dwelling remains lead-safe.

Replacement - A strategy of abatement that entails removing components such as windows, doors, and trim that have lead painted surfaces and installing new or de-lead components free of lead-based paint.

Risk Assessment - A on-site investigation of a residential dwelling to discover any lead-based paint hazards. Risk assessments include an investigation of the age, history, management, and maintenance of the dwelling, and the number of children under age 6 and women of childbearing age who are residents; a visual assessment; limited environmental sampling (i.e., collection of dust wipe samples, soil samples, and deteriorated paint samples); and preparation of a report identifying acceptable abatement and interim control strategies based on specific conditions.

Risk Assessment Screen - A type of risk assessment performed only in buildings in good condition using fewer samples but more stringent evaluation criteria (standards) to determine lead hazards.

Inspector Risk Assessor - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health Sections 20-478-1 through 20-478-3 to (1) perform risk assessments, (2) identify acceptable abatement and interim control strategies for reducing identified lead-based paint hazards, (3) perform clearance testing and reevaluations, and (4) document the successful completion of lead-based paint hazard control activities.

Toxicity Characteristic Leaching Procedure (TCLP) - Toxicity characteristic leaching procedure utilizing EPA Test method SW-846, Method 1311 to determine whether waste can be classified as hazardous or construction waste for disposal purposes.

Visible Residue - Any paint debris, dust, or chips on surfaces within the work area where lead abatement has taken place and which is visible to the unaided eye.

Wet Cleaning - The process of eliminating lead dust and chip contamination from surfaces by using cloths, mops, or other cleaning tools which have been dampened with water and afterwards disposing of the cleaning items as hazardous lead waste.

Wipe Test - A test used to determine the concentration of lead particles; used to determine whether clearance levels for lead abatement have been achieved. A wipe test assimilates the dust from a measured surface area of about one square foot and is laboratory analyzed to determine the quantity of lead contained in that area.

X-ray Fluorescence (XRF) Analyzer - An analytical instrument which measures lead concentration of dried paint on surfaces or in a laboratory sample in milligrams per square centimeter (mg/cm²) using a radioactive source within the instrument. There are two types of XRF-analyzers commonly available which require distinct and different testing protocols - "direct read" and "spectrum analyzer".

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

Section 19a-111-1 through 19a-111-11 - Lead Poisoning Prevention And Control Regulations.

Section 20-478-1 through 20-478-3 - Lead Licensure and Certification Regulations.
 2. State of Connecticut, Department of Environmental Protection (DEP)

Section 22a-209-1 through 22a-209-16 - Solid Waste Management Regulations.

Section 22a-449(c)-100 through 22a-449(c)110 and 22a-449(c)-11 - Hazardous Waste Management Regulations.
 3. Occupational Safety and Health Administration (OSHA)

24 CFR 35 - Lead Based Paint Poisoning Prevention.

29 CFR 1910.134 - Respiratory Protection.
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29 CFR 1910.146 - Permit-Required Confined Spaces.

29 CFR 1926.21 - Safety Training.

29 CFR 1926.28 - Personal Protective Equipment.

29 CFR 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists.

29 CFR 1926.57 - Ventilation.

29 CFR 1926.59 - Hazard Communication.

29 CFR 1926.62 - Lead.

29 CFR 1926.103 - Respiratory Protection.

4. Environmental Protection Agency (EPA)

40 CFR 260 - Hazardous Waste Management Systems: General.

40 CFR 261 - Identification and Listing of Hazardous Waste.

40 CFR 262 - Generators of Hazardous Waste.

40 CFR 263 - Transporters of Hazardous Waste

40 CFR 264 - Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 268 - Land Disposal Restrictions

40 CFR 745 - Subpart F - Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards Upon Sale or Lease of Residential Property.

40 CFR 745 - Subpart L - Lead-Based Paint Activities.

40 CFR 745 - Subpart Q - State and Indian Tribal Programs.

5. Department of Transportation (DOT)

49 CFR 172 - Hazardous Materials Tables and Hazardous Materials Communications Regulations

49 CFR 178 - Shipping Container Specification

6. Department of Housing and Urban Development (HUD)

Lead-Based Paint: Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

1.5 DOCUMENTATION

A. Submit the following documentation to ensure compliance with applicable regulations. An up to date copy shall be retained at the job site at all times.

B. Manufacturer's Catalog Data:

- HEPA Vacuum Equipment
- Respirators
- Lead Specific Detergent
- Lead Encapsulating Materials
- Portable Shower Units and Hand Washing Facilities
- Chemical Removal Agents
- Neutralizers for Chemical Removal Agents
- MSDS for All Materials

C. Statements:

- DEP Hazardous Waste ID for Generator
- Hazardous Waste Transport and Disposal Permits
- Worker Training Certification
- Worker Medical Certification
- Worker Blood Lead Level
- Worker Respiratory Fit Testing
- Laboratory Certification
- Safety plan
- Respirator Protection Plan
- Hazard Communication Plan
- Site Specific Lead Abatement Plan

1. Copies of all required approvals and permits for disposal and transport of hazardous lead-bearing waste including the HW identification number of the waste hauler.
 2. Documentation from a physician certifying that all employees who may be exposed to airborne lead dust 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 1926.62. 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 to which he/she may be exposed. Training certificates, licenses, respirator fit test certificate and medical records (including pre-abatement blood lead
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- levels and medical clearance to wear a respirator) for each lead abatement worker shall be available.
3. Documentation certifying that all employees have received training in the proper handling of materials that contain lead dust; understand the health implications and risks involved, including the illnesses possible from exposure to airborne lead dust fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of lead dust as related to health and respiratory equipment as indicated in 29 CFR 1926.62 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 1926.62.
 5. Qualifications of the laboratory and person proposed for air sampling to assure workers are using appropriate respiratory protection in accordance with 29 CFR 1926.62. The Project Monitor shall be licensed by Connecticut DPH. Include the name and address of the testing laboratory proposed to perform air monitoring on behalf of the Contractor, along with their NIOSH PAT Program I.D. number.
 6. 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 and injury. Include any site specific information to address health and safety procedures unique to this project.
 7. 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.
 8. Establish a written Hazard Communication Plan in accordance with 29 CFR 1910.1200(e) and 29 CFR 1926.59(e). This plan shall establish procedures describing how the facility will comply with the standard; describe how MSDS's will be obtained and made available for each hazardous chemical used in the work area; describe how information and training will be provided to employees; include a list of all toxic chemicals known to be present in the work place, cross referenced to the MSDS file; explain how workers will be informed of hazards connected with non-routine tasks, such as dealing with accidental spills and leaks; explain how workers will be informed of hazards associated with chemicals contained in unlabeled pipes; and contain information on how other contract employers will be informed about hazards their employees may encounter while working in the facility.
 9. Written description of lead abatement activities planned detailing methods, equipment, engineering controls, crew size, employee job responsibilities, operating and maintenance procedures.

D. Records:

Worker Medical Records (including post-abatement blood-lead levels).
Worker Personal Air Sampling Results.
Certified Lead Waste Manifests.
TCLP Laboratory Results.

1.6 PERSONAL PROTECTION

- A. Prior to commencing work, instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment, including procedures unique to this project. A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.62.
- B. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.62. Provide appropriate respiratory protection equipment for each worker and ensure usage during potential lead dust exposure. 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 on the job whenever required for respirators in use.
- C. During the period of initial personal monitoring, personal exposure levels shall be presumed to be as specified in Table 1 with respiratory protection selected in compliance with Table 2. Following the initial personal monitoring period, select respirators using Table 2 and the personal monitoring data. Conducting a lead abatement activity without the use of a respirator is not permitted unless the personal monitoring data for that activity are all below the action level of 30 µg/cubic meter.

TABLE 1

<u>Activity</u>	<u>Presumed Exposure</u>
Removal of painted component	<50 µg/cubic meter
Manual demolition	<500 µg/cubic meter
Manual scraping	
Manual sanding	
Chemical removal	
Manual wire brushing	
Encapsulation	
Cleanup of chips, dust, or contaminated soil	
Shrouded power sanding, grinding, wire brushing, or needle gun removal	
Abrasive Blasting	<2500 µg/cubic meter
Welding	
Cutting, and	
Torch Burning	

TABLE 2

<u>Airborne Lead Dust Level</u>	<u>Required Respirator</u>
Not in excess of 500 µg/cubic meter(10xPEL)	Half-mask air-purifying respirator equipped with HEPA filters.
Not in excess of 2,500 µg/cubic meter(50xPEL)	Full face piece powered air- purifying respirator equipped with HEPA filters.

- D. Workers shall wear protective clothing in work areas where lead dust concentrations exceed permissible exposure limits established by OSHA. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings. Ensure all contaminated protective clothing is disposed of as lead-contaminated waste. Launderable clothing must be handled and washed in accordance with 29 CFR 1926.62.
- E. Workers wearing half-mask respirators shall also wear safety glasses with side shields.
- F. Provide protective clothing impervious to caustic materials during chemical removal activity. Provide gloves of neoprene composition during chemical removal activity. Provide face shields when conducting chemical removal above eye level. Provide organic vapor cartridges in addition to HEPA cartridges when conducting chemical removal activity.

1.7 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 lead shall be decontaminated or disposed of as lead 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 the job site with factory label indicating 6 mil.
 - B. 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.
 - C. Protective clothing used during chemical removal operations shall be impervious to caustic materials. Gloves used during chemical removal shall be of neoprene composition with glove extenders.
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- D. Polyethylene disposable bags shall be six (6) mil and transparent in color.
- E. Detergent shall be a high phosphate content lead specific cleaning agent.
- F. Chemical paint removal agents shall not contain methylene chloride. Chemical removers used on masonry surfaces shall contain anti-stain formulation that inhibits discoloration of stone, granite, or brick. Chemical removers used on wood surfaces shall not raise or discolor the surface being abated.
- G. Chemical removal agent neutralizer shall be compatible with the substrate which they are applied to and the chemical stripper they are used in conjunction with.
- H. Encapsulants must appear on the State of Connecticut, Department of Public Health, Childhood Lead Poisoning Prevention Program Registry of Authorized Encapsulant Products. Only listed products are authorized for use in Connecticut by the Department of Public Health. Encapsulants are classified as cementitious or liquid. The project work order shall indicate the encapsulant type and location of application.

2.2 TOOLS AND EQUIPMENT

- A. Tools and equipment shall be suitable for lead removal:
 - B. Air monitoring equipment shall be of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.
 - C. Electrical equipment, protective devices 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. One shower stall shall be provided for each eight workers.
 - E. 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 three micrometers in diameter or larger.
 - F. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.
 - G. For manual scraping activities, Contractor shall supply each worker with multiple newly sharpened scrapers on a daily basis.
 - H. Sanders, grinders, wire brushes and needle gun removal equipment shall be equipped with a HEPA filtered vacuum dust pick-up system.
 - I. 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.
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PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS FOR LEAD ABATEMENT

- A. A Competent Person shall be on the job at all times to ensure the establishment of proper separation of the work area from occupied areas, and proper work practices are followed through project completion.
- B. Post warning signs meeting the requirements of OSHA 29 CFR 1926.62 at each work area. In addition, signs shall be posted at all approaches to areas so that employees may read the sign and take the necessary protective steps before entering the area.
- C. Maintain emergency and fire exits from the building satisfactory to fire officials and the Owner.

3.2 WORKER PROTECTION

- A. Hygiene facilities shall be provided as indicated in the individual work order.
- B. Establish remote to the work area a worker decontamination enclosure consisting of equipment room, shower room, and clean room in series. Access between rooms in the worker decontamination enclosure shall be through double flap curtained openings. The shower room shall be of sufficient capacity to accommodate the lead abatement workers employed at the project. Supply warm water to showers. Provide one shower for each eight workers. The change room and wash facilities shall be equipped with suitable hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Shower and wash water shall be collected, filtered, and disposed of as specified in paragraph 3.16.
- C. Establish remote to the work area hand washing facilities. All workers shall wash prior to eating.
- D. No personnel shall be permitted to leave the work site or eat lunch unless first decontaminated by wet washing and HEPA vacuuming to remove all lead debris.
- E. No equipment shall be permitted to leave the work site unless first decontaminated by wet washing or HEPA vacuuming to remove all lead debris.

3.3 PREPARATION OF INTERIOR WORK AREAS

- A. Work area preparation level shall be as indicated in the individual work order. These levels correspond to tables 8.1, 8.2 and 8.3 of the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.
 - B. Seal off all openings including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with polyethylene sheeting and seal with tape. Doorways and corridors which will not be used for passage during work must be sealed with barriers as required for separation of work area and occupied areas. Equip doors leading into the lead control area with 2 overlapping sheets of 6 mil polyethylene sheeting attached at the top and one side.
-

- C. Occupied areas and/or building space not within lead control areas shall be separated from lead abatement work areas by means of airtight barriers.
- D. Provide drop cloths to catch falling paint chips and chemical removal agents at interior work areas.
- E. Where floors are carpeted, preferentially remove carpeting following pre-cleaning and replace with new carpeting following abatement. Where replacement is not feasible, cover floor of work area, following pre-cleaning, with one layer of 6 mil polyethylene sheeting, duct taped securely at the perimeter.
- F. Remove the building component or the LBP by approved methods which will provide the least disturbance to the substrate material and the environment. The description of work attached to the project work order shall indicate the abatement strategy.
- G. Building components which have been removed shall be recycled where feasible.

3.4 PREPARATION OF EXTERIOR WORK AREAS

- A. Work area preparation level shall be as indicated in the individual work order. These levels correspond to tables 8.1, 8.2 and 8.3 of the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.
- B. For dry waste place 6-mil polyethylene sheeting on the ground extending out from the foundation at least 5 feet and an additional 3 feet for each story to a maximum of 20 feet. Secure at the foundation by placing weights on the plastic. Erect vertical shrouds to contain any potential dust release into the adjacent environment.
- C. For liquid waste extend the end of the plastic a sufficient distance to contain the runoff and raise the edge of the sheets to trap liquid waste.
- D. Seal off all windows, openings, vents and HVAC equipment with critical barriers.
- E. Erect scaffolding, lifts or ladders adjacent to the exterior surface being abated.
- F. Cover all shrubs and bushes to prevent damage from liquid waste or dust.

3.5 SEPARATION OF LEAD WORK AREA FROM OCCUPIED AREAS

- A. Work area separation shall be as indicated in the individual work order. These levels correspond to tables 8.1, 8.2 and 8.3 of the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.
 - B. Occupied areas and/or building space not within lead control areas shall be separated from lead abatement work areas by means of airtight barriers.
 - C. Do not impair all building exits simultaneously from any occupied building area.
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- D. Shut all windows on the face of the building where lead paint removal is occurring. Seal all air conditioner intake grates and vents on the face of the building where lead paint removal is occurring.

3.6 CHEMICAL PAINT REMOVAL

- A. Apply chemical stripper in quantities and for duration's specified by manufacturer.
- B. Remove lead-based paint from surface down to bare substrate with no trace of residual pigment. Use sanding, hand scraping, and dental picks to supplement chemical methods as required to remove residual pigment.
- C. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
- D. Protect adjacent surfaces from damage by chemical removal methods.
- E. Maintain a portable eyewash station in the work area.

3.7 MECHANICAL PAINT REMOVAL

- A. Sanders, grinders, rotary wire brushes, or needle gun removers shall be equipped with a HEPA filtered vacuum dust collection system. Cowling on the dust collection system for orbital-type tools must be capable of maintaining a continuous tight seal with the surface being abated. Cowling on the dust collection system for reciprocating-type tools shall promote an effective vacuum flow of loosened dust and debris. Inflexible cowlings may be used on flat surfaces only. Flexible contoured cowlings are required for curved or irregular surfaces.
 - B. HEPA vacuum shall be high performance designed to provide maximum static lift and maximum vacuum system flow at the actual operating vacuum condition with the shroud in use. HEPA vacuum shall be equipped with a pivoting vacuum head.
 - C. Remove all lead based paint from surface down to bare substrate with no trace of residual pigment. Use chemical methods, hand scraping, and dental picks to supplement abrasive removal methods as required to remove residual pigment.
 - D. Protect adjacent surfaces from damage from abrasive removal techniques.
 - E. Perform wet scraping by using a spray bottle or sponge attached to a paint scraper. Wet scraping shall be utilized to prepare surfaces prior to paint film stabilization or encapsulation. Scraper blades should be kept sharp. After scraping, and prior to encapsulation, wet sand surfaces to smooth any rough areas.
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3.8 PROHIBITED PAINT REMOVAL METHODS

- A. The use of heat guns, or any blasting media, or power tool assisted grinding, sanding, cutting, or wire brushing without the use of HEPA vacuum dust collection systems to remove lead-based paint is prohibited.
- B. Welding or torch cutting of materials painted with lead-based paint is prohibited. Where cutting, welding, rivet busting, or torch cutting of materials is required, prior removal of the lead-based paint shall be performed in the affected area.
- C. Dry scraping.

3.9 SOIL REMOVAL

- A. Remove soil to a depth of 6 inches by mechanical or hand methods. Contaminated soil shall be placed directly into containers prior to transporting to the waste disposal site.
- B. After completion of soil removal, HEPA vacuum adjacent concrete or asphalt until no visible accumulations of paint chips are present.

3.10 COMPONENT REPLACEMENT

- A. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
- B. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the building component by approved methods which will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
- C. Initiate cleanup immediately after component removals have been completed. Remove any dust located behind the component removed.

3.11 ENCLOSURE

- A. Materials and methods of enclosure shall be as specified in the individual work order.
 - B. All surfaces to be enclosed shall be free of dirt, dust, mildew, scale, rust or other deleterious material. Properly remove all loose or peeling paint and wash down the surface with a lead specific detergent. Repair all substrate damage with an appropriate patching material.
 - C. Prior to enclosure, label all lead-based paint containing surfaces.
 - D. Enclosure materials shall be mechanically fastened to existing framing members. Caulk all perimeters of enclosure materials. Do not damage adjacent surfaces.
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3.12 ENCAPSULATION

- A. Procedures for the application of encapsulation products shall be in accordance with CT DPH guidance document Information on Applying Liquid Encapsulants to Interior Surfaces for Property Owners and Lead Professionals.
- B. Application of encapsulants to friction or impact surfaces is prohibited.
- C. All surfaces to be encapsulated shall be free of dirt, dust, mildew, scale, rust or other deleterious material. Properly remove all loose or peeling paint and wash down the surface with a lead specific detergent. Repair all substrate damage with an appropriate patching material.
- D. Prior to application of encapsulants, perform the tape, X-cut tape and patch tests in accordance with CT DPH guidance document Information on Applying Liquid Encapsulants to Interior Surfaces for Property Owners and Lead Professionals to determine if the surface is suitable for encapsulation.
- E. Follow the encapsulant manufacturers printed application instructions.
- F. Do not damage adjacent surfaces.

3.13 DECONTAMINATION PROCEDURES

- A. All workers must wash upon leaving the work area. Wash facilities will be provided by the abatement contractor in compliance with 29 CFR 1926.51(f) and 29 CFR 1926.62. This wash facility will consist of, at least, running potable water, towels, soap, and a HEPA vacuum. Upon leaving the work area, each worker will HEPA vacuum gross debris from work suit, remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. Do not remove lead chips or dust by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed of in accordance with all applicable regulations.
 - B. Operational shower facilities, remote to the Lead Control Area, shall be provided by the contractor and maintained in working order such that any worker has the option of decontamination by showering. If air monitoring data by the contractor or Owner's inspector or risk assessor shows that employee exposure to airborne lead exceeds 50 $\mu\text{g}/\text{m}^3$, the following mandatory showering conditions apply:
 - 1. Street clothes cannot be worn into the Lead Control Area and shall be stored in the change room. Workers shall wear disposable suits over clothing that stays on site in the change room, or disposable suits over nylon or Tyvek undergarments, or coveralls that are laundered on site.
 - 2. Street shoes cannot be worn into the Lead Control Area and shall be stored in the change room. Dedicated shoes that do not leave the Lead Control Area may be utilized. Work shoes covered by disposable booties may be utilized if the shoes are cleaned after each use and kept in the change room.
 - 3. Showers must be utilized.
 - C. Ensure proper entry and exit procedures for all persons who enter and leave the Lead Control Area.
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3.14 CLEANING

- A. Remove and containerize all visible accumulations of paint chips and associated dust and debris. During clean-up, utilize rags and sponges wetted with lead-specific detergent and water to minimize dust levels.
- B. Mop heads, waste water, broom heads, rags, and sponges used in the clean-up activity shall be disposed of as hazardous lead-bearing waste.
- C. Sealed disposal containers and all equipment used in the work area shall be included in the clean-up.
- D. Clean all surfaces with HEPA filtered vacuum equipment prior to wet cleaning all surfaces within regulated area.

3.15 CLEARANCE

- A. A certified Inspector or Inspector Risk Assessor shall conduct all clearance testing inspections. Clearance dust sampling should be performed no sooner than 1 hour after completion of the final cleanup to permit the dust to settle.
- B. Visual Inspection Protocol: Visual inspection will verify the work has been completed and the area in which the work was performed does not contain visible dust.
- C. Dust Sampling Protocol: For interior abatement in facilities scheduled for reoccupancy where documentation that the work area has been adequately cleaned to meet CT DPH regulations Section 19a-111-4(e) is desired use the following testing protocol:
 - 1. Following the final visual inspection, a certified Inspector or Inspector Risk Assessor shall take lead wipe samples from the area that has undergone interior lead abatement activity.
 - 2. Following wipe analysis, if lead dust levels are in excess of the limits as set forth in the Regulations of Connecticut State Agencies, Section 19a-111-4.

The Contractor shall repeat HEPA vacuuming and wet-wiping the entire room. Repeat the testing and cleaning sequence until the standard for clearance has been achieved.

- D. For soil abatement or exterior abatement situations where documentation of soil decontamination is desired use the following testing protocol:
 - 1. For contaminated soil abatement areas a certified inspector or risk assessor shall take post-abatement soil samples (one (1) composite sample for every 500 square feet of abated soil area at randomly selected locations) and have the samples analyzed by atomic absorption for lead content. Samples shall be taken using a steel trowel to extract soil to a depth of four (4) inches. Three (3) randomly selected samples shall be taken from each 500 square foot area and the three (3) samples shall be mixed into one container for analysis.
 - 2. If any of the post-abatement soil samples exceed 2000 milligrams of lead per kilogram of soil analyze baseline soil samples to determine if the soil had a high lead level prior to the work.
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3.16 WASTE DISPOSAL

- A. Disposal of hazardous lead bearing material must be in compliance with the requirements of, and authorized by the State of Connecticut, Department of Environmental Protection, Office of Solid Waste Management and the with the requirements of the Resource Conservation and Recovery Act (RCRA).
- B. The following materials are likely to leach lead at hazardous levels in excess of 5 mg/liter. The Contractor shall containerize and dispose of the following materials as hazardous lead waste at an EPA approved treatment, storage, and disposal facility:
1. Paint chips
 2. Paint dust
 3. Sludge from chemical stripping
 4. Dust from HEPA filters and from damp sweeping
 5. Rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials using for testing, abatement, and clean up
 6. Disposable work clothes and respirator filters
 7. Contents of HEPA vacuums used on this project
 8. Polyethylene sheeting used during the course of chemical removal or heat gun removal
 9. All used duct tape
- C. Contractor shall transport the following materials generated during renovation activity to a scrap metal yard for recycling:
1. Any metal components painted with lead based paint
 2. Metallic lead components
- D. Contractor shall wipe the following materials clean of all dust, dirt, and debris and dispose of the material as construction debris:
1. Polyethylene sheeting used in abatement activities other than chemical or heat gun removal
- E. Contractor shall collect the wash water generated by the worker shower, wash facilities, or steam cleaning operations in 55 gallon drums and filter the water using a 2 stage filtration system composed of:
1. 5 micron porosity in-line cartridge particulate filter followed by:
 2. Activated carbon filter in-line cartridge
- Hold the filtered water for testing by the State's Inspector or risk assessor prior to discharge to the sanitary sewer. The State's Inspector or risk assessor shall test the water and verify lead levels below 0.1 parts per million (ppm) and Ph between 6 and 8 prior to discharge. Water that fails the testing criteria shall be treated with sodium hydroxide, Ph adjusted, and retested. If the second test fails the 0.1 parts per million (ppm) of water test, Contractor shall filter waste water by reverse osmosis prior to testing and discharge to the sanitary sewer.
- F. All hazardous lead waste shall be containerized in accordance with 49 CFR 178. Label and placard each container in accordance with 29 CFR 1926.62 and 49 CFR 172 to identify the type of waste and the date the container was filled.
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- G. The Contractor may not store containerized hazardous lead waste on the job site for in excess of 180 calendar days from the accumulation start date.
- H. Contractor shall utilize a certified transporter for hazardous waste in compliance with DOT 49 CFR 172.
- I. Contractor shall submit the completed Uniform Hazardous Waste Manifest, EPA Form 8700-22 for each load of hazardous waste within 30 calendar days following the date the load leaves the site.

3.17 REINSTALLATION OF DISPLACED EQUIPMENT

- A. After reoccupancy 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, and sound systems.

END OF SECTION 02 83 00

PART 1 - GENERAL

1.1 SCOPE

- A. The work specified herein shall include the remediation of building components contaminated with mold and the abatement of hazardous materials. Remediation and abatement activities shall be performed by persons who are knowledgeable, qualified, and trained in the removal, treatment, handling, and disposal of mold and hazardous materials, and the subsequent cleaning of the affected environment. Specific requirements for mold and hazardous materials remediation will be established by the Owner's Environmental Consultant. These requirements are to include, but are not limited to: containment and negative air requirements; specific work practices or methods of accomplishing remediation and establishment of the clearance standard for reoccupancy.
- B. The Owner will retain the services of an Environmental Hygienist for protection of its interests and those using the building. Monitoring will be conducted as deemed necessary.
- C. Restore all work areas and auxiliary areas utilized during remediation 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 Owner. The Contractor is responsible for protecting all objects in work areas that are permanent fixtures or too large to remove.
- D. 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 Owner 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.
 - 6. Provide OSHA required personal monitoring to ensure adequate respiratory protection for each worker.
- E. 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 Owner at no cost to the Owner.

1.2 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on mold and hazardous materials), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications
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- B. A description of the scope of work will be attached to each individual project work order.
- C. The Contractor shall provide these services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. In addition, the Contractor shall acquire professional training in mold abatement, and become familiar with technical and reference materials referenced in the State of Connecticut, Department of Public Health (DPH) “*CT Guidelines for Mold Abatement Contractors*”. This document refers readers to the most current version available of the *Institute for Inspection, Cleaning and Restoration Certification (IICRC), Standard and Reference Guide for Professional Mold Remediation, S520*, which provides a detailed discussion about the technical aspects of mold abatement.
- D. The Contractor shall provide these services in accordance with the guidelines established in the documents listed below, and any subsequent updated re-issues of the documents:
- Connecticut Guidelines for Mold Abatement Contractors, 2006, Connecticut Department of Public Health (DPH);
 - Standard and Reference Guide for Professional Mold Remediation, S520, December 2003, Institute for Inspection, Cleaning and Restoration Certification (IICRC) ;
 - Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health, 2006;
 - Mold Remediation in Schools and Commercial Buildings, March 2001, United States Environmental Protection Agency (US EPA);
 - Fungal Contamination in Buildings: A Guide to Recognition and Management, Health Canada, 1995;
 - The Industrial Hygienist's Guide to Indoor Air Quality Investigations, 1993 (AIHA);
 - Building Air Quality, A Guide for Building Owners and Facility Managers, 1991 (US EPA);
 - Bioaerosols: Assessment and Controls, 1999, American Conference of Governmental Industrial Hygienists (ACGIH);
 - Field Guide for the Determination of Biological Contaminants in Environmental Samples, 1996, American Industrial Hygiene Association (AIHA);
 - Complete School Guidance Document, DPH;
 - Ventilation for Acceptable Indoor Air Quality, ANSI/ASHRAE Standard 62-2001;
 - Indoor Air Quality – A Systems Approach, Sheet Metal and Air Conditioning Contractors’ National Association (SMACNA);
 - IAQ Guidelines for Occupied Buildings Under Construction, SMACNA.
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1.3 DEFINITIONS

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

Competent Person - An individual who is capable of identifying existing and predictable mold and/or other hazardous materials in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

Concealed Space - Space, which is out of sight. Examples of a concealed space include area above hard ceilings; below floors; between double walls; furred-in areas; pipe and duct shafts; and similar spaces which cannot be examined without invasive removal of building components or disturbance of finishes.

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, P.O. Box 340308, Hartford, CT 06134-0308.

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.

Encapsulation - The resurfacing or covering of surfaces, and sealing or caulking with durable materials so as to prevent or control chalking or flaking.

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 1/2" 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 State.

Hazardous Waste: As defined in the Resource Conservation and Recovery Act (RCRA) the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity; concentration; or physical, chemical, or infectious characteristics may cause, or significantly contribute to increases in mortality, increase in serious and irreversible or incapacitating but reversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed. As defined in the regulations, solid waste is hazardous if it meets one of four conditions:

- Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24),
- Has been listed as hazardous (40 CFR Section 261.31 through 261.33),
- Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste), or
- Is not excluded from regulation as a hazardous waste.

HEPA Filter Equipment - High-efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system. 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.

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.

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

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

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

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 Residue - Any debris, dust, or chips on surfaces within the work area where abatement has taken place and which is visible to the unaided eye.

Wet Cleaning - The process of eliminating dust and chip contamination from surfaces by using cloths, mops, or other cleaning tools which have been dampened with water and afterwards disposing of the cleaning items as hazardous waste.

Wipe Test - A test used to determine the concentration of dust particles; used to determine whether clearance levels for mold and/or hazardous materials abatement have been achieved. A wipe test

assimilates the dust from a measured surface area of about one square foot and is laboratory analyzed to determine the quantity of mold and/or hazardous materials contained in that area.

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

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 1926.21 - Safety Training and Education.
 - 29 CFR 1926.32 - Definitions.
 - 29 CFR 1926.51 - Sanitation.
 - 29 CFR 1926.55 - Gases, vapors, fumes, dusts, and mists.
 - 29 CFR 1926.59 - Hazard Communication.
 - 29 CFR 1926.200 - Accident Prevention Signs and Tags.
 - 29 CFR 1926.417 - Lockout and Tagging of Circuits.
 2. American National Standards Institute (ANSI)
 - ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust Systems.
 - ANSI Z88.2 - Respiratory Protection.
 3. 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.
 4. Underwriters Laboratories, Inc. (UL)
 - UL 586 - High-Efficiency, Particulate, Air Filter Units.

1.5 DOCUMENTATION

- A. Submit two copies of the following documentation to the Owner to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times.
- B. Manufacturer's Catalog Data:
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- Local Exhaust Equipment
- Respirators
- Pressure Differential Automatic Recording Instrument
- Polyethylene Sheeting
- Airless Sprayers
- MSDS for All Materials Delivered to the Site
- Biocides
- Cleaning Chemicals
- Encapsulating Materials
- HEPA Vacuum Equipment

C. Statements:

- DEP Hazardous Waste ID for Generator
- Hazardous Waste Transport and Disposal Permits
- Worker Training Certification
- Worker Medical Certification
- Worker Respiratory Fit Testing
- Laboratory Certification
- Safety plan
- Respirator Protection Plan
- Hazard Communication Plan
- Site Specific Mold and/or Other Hazardous Materials Abatement Plan

D. Records:

- Sign-in/out Logs
- Personal Air Sampling Results
- Waste Shipment Records
- Pressure Differential Recording Data
- NPE Inspection and Smoke Test Logs

1.6 PERSONNEL PROTECTION

- A. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134. Provide appropriate respiratory protection for each worker and ensure usage during potential mold and/or other hazardous materials exposure whenever engineering and work practice controls are not adequate to prevent atmospheric contamination at the job site. Select respirators from among those approved as being acceptable for protection by the National Institute for Occupational Safety and Health (NIOSH). Provide an adequate supply of filter elements on the job whenever required for respirators in use.
 - B. Provide dermal and respiratory protection for all workers to wear in the Work Areas. The selection of personal protective equipment depends on the anticipated exposure, types of microbial and/or hazardous materials contamination, activities to be completed and potential hazards of chemicals that may be used in the remediation process. Personal protective equipment can consist of: respirator, eye protection, disposable impervious coveralls (including hood and booties) with elastic wrists and ankles, foot protection, hand protection, head protection, and hearing protection. In accordance with 29 CFR 1910.32, each worker shall be provided with the necessary personal protective equipment to reduce the risk of exposure to chemical, physical, or biological hazards.
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1.7 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 mold and/or hazardous waste shall be decontaminated or disposed of appropriately.

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 six (6) mil.
- B. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finish or unfinished surfaces. Tape must be capable of adhering under both dry and wet conditions.
- C. Scrub brushes, disposable sponges and towels as appropriate for the work.
- D. Biocides shall be specific for the intended purpose of cleaning mold contamination from building components or materials.
- E. Containers must be impermeable and shall be both air and watertight.

2.2 TOOLS AND EQUIPMENT

- A. Tools and equipment shall be suitable for the work.
 - 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. 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 Work Area.
 - E. 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.
 - F. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.
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- G. Removal equipment (including, but not limited to sanders, grinders, and pneumatic hammers) shall be equipped with a HEPA filtered vacuum dust pick-up system.
- H. Other materials such as lumber, nails and hardware necessary to construct and dismantle the barriers that isolate the Work Area shall be provided as appropriate for the work.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS FOR REMEDIATION

- A. A Competent Person shall be on the job at all times to ensure the establishment of proper separation of the Work Area from occupied areas, and proper work practices are followed through project completion.
- B. Post warning signs meeting the requirements of OSHA 29 CFR 1910.37 (egress means and exits) and OSHA 29 CFR 1910.145 (biological hazards, caution, and dangers) at each Work Area. In addition, signs shall be posted at all approaches to areas so that employees may read the sign and take the necessary protective steps before entering the area.
- C. Maintain emergency and fire exits from the building satisfactory to fire officials and the Owner.
- D. Containerize waste material removed daily. Do not allow debris to remain on the floor. Fill disposal containers as removal proceeds, seal filled containers.

3.2 WORKER PROTECTION

- A. Hygiene facilities shall be provided as indicated in the individual work order.
- B. Establish remote to the Work Area hand washing facilities. All workers shall wash prior to eating.
- C. No equipment shall be permitted to leave the work site unless first decontaminated by wet washing or HEPA vacuuming to remove all mold and/or other hazardous material debris.

3.3 PREPARATION OF INTERIOR WORK AREAS

- A. Work Area preparation level shall be as indicated in the individual work order.
 - B. Prior to beginning work, the Owner Construction Administrator, Consultant and Contractor shall perform a visual survey of each Work Area and list all pre-existing damage to building components. The Contractor shall submit to the Construction Administrator a list, of pre-existing damaged areas.
 - C. 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. Remove or 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 Owner.
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- D. Provide temporary power and lighting 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.
- E. Seal off all openings including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the Work Areas, with polyethylene sheeting and seal with tape. Doorways and corridors which will not be used for passage during work must be sealed with barriers as required for separation of Work Area and occupied areas. Equip doors leading into the control area with 2 overlapping sheets of 6 mil polyethylene sheeting attached at the top and one side.
- F. As indicated in the individual work order, occupied areas and/or building space not within control areas may be separated from abatement Work Areas by means of airtight barriers.
- G. Cover floor of Work Area, following pre-cleaning, with one layer of 6 mil polyethylene sheeting, duct taped securely at the perimeter.
- H. Where floors are carpeted, preferentially remove carpeting following pre-cleaning and replace with new carpeting following abatement. Where replacement is not feasible, cover floor of Work Area, following pre-cleaning, with one layer of 6 mil polyethylene sheeting, duct taped securely at the perimeter.
- I. Remove the building component by approved methods which will provide the least disturbance to the substrate material and the environment. The description of work attached to the project work order shall indicate the abatement strategy.
- J. Building components which have been removed shall be recycled where feasible.
- K. Conspicuously label and maintain emergency and fire exits satisfactory to the Owner.

3.4 PREPARATION OF EXTERIOR WORK AREAS

- A. Work Area preparation level shall be as indicated in the individual work order.
- B. Place 6-mil polyethylene sheeting on the ground extending out from the foundation at least 5 feet and an additional 3 feet for each story to a maximum of 20 feet. Secure at the foundation by placing weights on the plastic. Erect vertical shrouds to contain any potential dust release into the adjacent environment.
- C. Seal off all windows, openings, vents and HVAC equipment with critical barriers.
- D. Erect scaffolding, lifts or ladders adjacent to the exterior surface being abated.
- E. Cover all shrubs and bushes to prevent damage from liquid waste or dust.

3.5 SEPARATION OF WORK AREA FROM OCCUPIED AREAS

- A. Work Area separation shall be as indicated in the individual work order.
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- B. As indicated in the individual work order, occupied areas and/or building space shall be separated from 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.
- C. Do not impair all building exits simultaneously from any occupied building area. Where normal exits have been blocked by the abatement work, provide temporary exit signs directing building occupants to the nearest available exit location.
- D. Shut all windows on the face of the building where abatement is occurring. Seal all air conditioner intake grates and vents on the face of the building where abatement is occurring.
- E. As indicated in the individual work order, create a pressure differential between the Work Area and occupied areas by the use of acceptable pressure differential equipment.

3.6 MECHANICAL MOLD AND/OR HAZARDOUS MATERIAL REMOVAL

- A. Remove building components or materials in accordance with the specific description of work to be accomplished. Methods for component removal shall be appropriate for the work and are to be performed in a manner to minimize the risk of contamination in other areas of the building.
- B. Removal equipment (including, but not limited to, sanders, grinders, and pneumatic hammers) shall be equipped with a HEPA filtered vacuum dust collection system. Cowling on the dust collection system for orbital-type tools must be capable of maintaining a continuous tight seal with the surface being abated. Cowling on the dust collection system for reciprocating-type tools shall promote an effective vacuum flow of loosened dust and debris. Inflexible cowlings may be used on flat surfaces only. Flexible contoured cowlings are required for curved or irregular surfaces.
- C. HEPA vacuum shall be high performance designed to provide maximum static lift and maximum vacuum system flow at the actual operating vacuum condition with the shroud in use. HEPA vacuum shall be equipped with a pivoting vacuum head.
- D. As indicated in the individual work order, remove all mold and/or hazardous materials from surface down to bare substrate with no trace of residual material. Use wet wiping, wet sponging, wet scraping, and wet brushing (with a nylon brush) to supplement abrasive removal methods as required to remove residual material (wire brushes are not permitted).
- E. Protect adjacent surfaces from damage from abrasive removal techniques.
- F. Perform wet scraping by using a spray bottle or sponge attached to a paint scraper. Wet scraping shall be utilized to prepare surfaces prior to encapsulation. Scraper blades should be kept sharp. After scraping, and prior to encapsulation, wet sand surfaces to smooth any rough areas.
- G. During removal, spray the work area with water using airless spray equipment capable of providing a "mist" application to reduce airborne dust. Hose length shall be sufficient to reach all of the work area. Do not "flood" the area with hose type water supply equipment with the potential to create water releases from the work area.

3.7 PROHIBITED MOLD AND/OR HAZARDOUS MATERIAL REMOVAL METHODS

- A. Dry scraping.
- B. Wire brushes.

3.8 CLEANING OF CONTAMINATED BUILDING COMPONENTS OR MATERIALS

- A. Clean building components or materials in accordance with the specific description of work provided by the Owner Environmental Hygienist. Methods for cleaning shall be appropriate for the work to be performed.
- B. All surfaces from which mold and/or other hazardous materials have 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). Cleaning shall also include the use of HEPA filtered vacuum equipment
- C. Cleaning shall proceed in a manner such that dislodged materials will be collected on rags or by the HEPA vacuum equipment. Methods that agitate contamination are not permitted.
- D. Biological agents shall be used in strict accordance with the manufacturer's printed instructions. Biological agents may only be applied to clean or cleaned surfaces.

3.9 SOIL REMOVAL

- A. As indicated in the individual work order, remove soil to the indicated depth by mechanical or hand methods. Contaminated soil shall be placed directly into containers prior to transporting to the waste disposal site.
- B. After completion of soil removal, HEPA vacuum adjacent concrete or asphalt until no visible accumulations of hazardous materials are present.

3.10 COMPONENT REPLACEMENT

- A. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
- B. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the building component by approved methods which will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
- C. Initiate cleanup immediately after component removals have been completed. Remove any dust located behind the component removed.

3.11 ENCLOSURE

- A. Materials and methods of enclosure shall be as specified in the individual work order.
 - B. All surfaces to be enclosed shall be free of dirt, dust, mildew, scale, rust or other deleterious material. Properly remove all loose hazardous materials and appropriately wash down the surface. Repair all substrate damage with an appropriate patching material.
 - C. Prior to enclosure, label all mold and/or hazardous-material containing surfaces.
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- D. Enclosure materials shall be mechanically fastened to existing framing members. As indicated in the individual work order, caulk all perimeters of enclosure materials. Do not damage adjacent surfaces.

3.12 ENCAPSULATION

- A. All surfaces to be encapsulated shall be free of dirt, dust, mildew, scale, rust or other deleterious material. Properly remove all loose mold and/or hazardous materials. Repair all substrate damage with an appropriate patching material.
- B. Follow the encapsulant manufacturers printed application instructions.
- C. Do not damage adjacent surfaces.

3.13 DECONTAMINATION PROCEDURES

- A. All workers must wash upon leaving the work area. Wash facilities will be provided by the abatement contractor in compliance with 29 CFR 1926.51(f). This wash facility will consist of, at least, running potable water, towels, soap, and a HEPA vacuum. Upon leaving the work area, each worker will HEPA vacuum gross debris from work suit, remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. Do not remove dust by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed of in accordance with all applicable regulations.
- B. Ensure proper entry and exit procedures for all persons who enter and leave the Control Area.

3.14 CLEANING

- A. Remove and containerize all visible accumulations of mold and/or hazardous material dust and debris. During clean-up, utilize rags and sponges wetted with detergent and water to minimize dust levels.
- B. Mop heads, waste water, broom heads, rags, and sponges used in the clean-up activity shall be disposed of as hazardous waste.
- C. Sealed disposal containers and all equipment used in the work area shall be included in the clean-up.
- D. Clean all surfaces with HEPA filtered vacuum equipment prior to wet cleaning all surfaces within regulated area.

3.15 POST-REMEDIATION ASSESSMENT

- A. Specific requirements prior to reoccupancy of the remediated area will be established by the Owner Environmental Consultant.
 - B. The post-remediation assessment will include a visual inspection, bioaerosol sampling and ~~dust~~ wipe sampling. The extent of sampling and specific cleanliness requirements for each project will be established prior to remediation. Sampling requirements will be consistent with the level of contamination remediated.
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3.16 WASTE DISPOSAL

- A. Disposal of hazardous material shall occur at an authorized site and must be in compliance with the requirements of, and authorized by the State of Connecticut, Department of Environmental Protection, Office of Solid Waste Management or other designated agency having jurisdiction over solid waste disposal and the with the requirements of the Resource Conservation and Recovery Act (RCRA).
- B. The following materials are likely to contain hazardous materials. The Contractor shall containerize and dispose of the following materials as hazardous waste at an EPA approved treatment, storage, and disposal facility:
 - 1. Dust from HEPA filters and from damp sweeping
 - 2. Rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials using for testing, abatement, and clean up
 - 3. Disposable work clothes and respirator filters
 - 4. Contents of HEPA vacuums used on this project
 - 5. All used duct tape
- C. Contractor shall wipe the following materials clean of all dust, dirt, and debris and dispose of the material as construction debris:
 - 1. Polyethylene sheeting used in abatement activities
- D. Contractor shall collect the wash water generated by the wash facilities or steam cleaning operations in 55 gallon drums and filter the water using a 2 stage filtration system composed of:
 - 1. 5 micron porosity in-line cartridge particulate filter followed by:
 - 2. Activated carbon filter in-line cartridge
- E. All hazardous waste shall be containerized in accordance with 49 CFR 178. Label and placard each container in accordance with 49 CFR 172 to identify the type of waste and the date the container was filled.
- F. The Contractor may not store containerized hazardous waste on the job site for in excess of 180 calendar days from the accumulation start date.
- G. Contractor shall utilize a certified transporter for hazardous waste in compliance with DOT 49 CFR 172.
- H. Contractor shall submit the completed Uniform Hazardous Waste Manifest, EPA Form 8700-22 for each load of hazardous waste within 30 calendar days following the date the load leaves the site.

3.17 REINSTALLATION OF DISPLACED EQUIPMENT

- A. After reoccupancy 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, and sound systems.

3.18 REMOVAL OF HAZARDOUS MATERIALS

- A. Removal of fluorescent fixture components may require special handling and disposal. Remove and recycle fluorescent lamps. Identify and separate PCB-containing and non-PCB-containing ballasts. Remove, handle, and dispose of PCB's in accordance with 40 CFR 761 and applicable federal, state, and local regulations. Unless labeled otherwise, all fluorescent light fixture ballasts are assumed to contain PCB's. Accomplish ballast removal within a contained area. Workers shall be trained in accordance with 29 CFR 1910.120 and shall wear appropriate personal protective equipment while removing PCB-containing ballasts from fixtures. Remove ballasts and wipe fixtures to remove PCB contamination or dispose of entire fixture as PCB contaminated. Ballasts and PCB contaminated rags and protective clothing shall be placed in appropriately labeled hazardous waste storage containers and destroyed in accordance with all applicable regulations. Uncontaminated light fixtures may be disposed of as construction debris. Disposal of regulated components shall be in accordance with State and Federal regulations.

- B. Removal of other materials identified during mold remediation work shall be accomplished in accordance with all applicable Federal and State regulations.

END OF SECTION 02 85 00



Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(G)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor or principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions of solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil Penalties – Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties – Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "Lobbyist/Contractor Limitations."



DEFINITIONS

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a state contractor or prospective state contractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

“State contract” means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. “State contract” does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

“State contract solicitation” means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

“Managerial or discretionary responsibilities with respect to a state contract” means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

“Dependent child” means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such Individual.

“Solicit” means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

“Subcontractor” means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. “Subcontractor” does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a subcontractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

Contract # **16PSX0110**
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EXHIBIT D

STANDARD WAGE RATES

Information concerning Section 31-57f of the Connecticut General Statutes and when it applies may be obtained from the Connecticut Department of Labor's web site, which may currently be accessed at <http://www.ctdol.state.ct.us/wgwkstnd/standardwage.htm>.

Questions concerning Standard Wage Rates should be addressed to the Connecticut Department of Labor, Wage and Workplace Standards Division, 200 Folly Brook Blvd., Wethersfield, CT 06106-1114, 860/263-6790.