PROJECT #19MIL22301

MAY 28, 2019

ADDENDUM #3

PROJECT NAME: BOILER AND WATER HEATER REPLACEMENT AT NEW LONDON ARMORY

SUBJECT: SPECIFICATION FOR THE ABATEMENT OF HAZARDOUS MATERIALS

Original Bid Due Date / Time: May 29, 2019 2:00 pm changed to June 19, 2019 2:00PM

The bid dates are not changed by this addendum.

To: Prospective Bid Proposers:

This Addendum forms part of the "Contract Documents" and modifies or clarifies the original "Contract Documents" for this project referenced above. Prospective Bid Proposers shall acknowledge receipt of the total number the Addenda issued for this Project on the space provided on Section 00 41 00 Bid Proposal Form. Failure to do so may subject Bid Proposers to disqualification.

Addendum Item 1:

Question 1) Please clarify the scope and intent of the hazardous materials abatement. There does not appear to be a report or spec section on this.

Response: Specifications for the abatement of asbestos and lead during the replacement of boiler and water heater at the New London Armory are attached as follows:

- A. Attachment A SECTION 028213 Asbestos Abatement
- B. Attachment B SECTION 028313 Lead Abatement

Kerna Cancto

Ronna Cannata, Purchasing Supervisor

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PART 1 GENERAL

1.1 SCOPE

- A. Work under this item shall include the abatement of asbestos containing materials (ACM) and associated work by persons who are knowledgeable, qualified, trained and licensed in the removal, treatment, handling, and disposal of ACM and the subsequent cleaning of the affected environment. ACM shall include material composed of any type of asbestos in amounts greater than one percent (1%) by weight. The Contractor performing this work shall possess a valid Asbestos Abatement Contractor license issued by the Connecticut Department of Public Health (CTDPH).
- B. These Specifications govern all work activities that disturb asbestos containing materials. All activities shall be performed in accordance with, but not limited to, the current revision of the Occupational Safety and Health Administration (OSHA) General Industry Standard for Asbestos (29 CFR 1926.1001), the OSHA Asbestos in Construction Regulations (29 CFR 1926.1101), the United States Environmental Protection Agency (USEPA) Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR Part 61 Subpart M), the CTDPH Standards for Asbestos Abatement, Licensure and Training (19a-332a-1 through 16, 20-440-1 through 9 & 20-441), and the Connecticut Department of Energy and Environmental Protection (CTDEEP) Special Waste Disposal Regulations (22a-209-8(i)).
- C. The asbestos abatement work shall include the removal and disposal of all ACM that would be expected to be impacted, as identified on the Contract drawings and Specifications prior to the planned renovation/demolition project. A limited asbestos NESHAP survey was performed by TRC, Inc. for this project, and was used in conjunction with previous survey data for the site. The CT Military Department will retain the services of a State of Connecticut licensed Project Monitor for protection of its interests and those using the building.
- D. Deviations from these Specifications require the written approval of the Engineer and Owner.
- E. The Contractor may elect to utilize an Alternative Work Practice (AWP), if approved by the CTDPH and the Engineer/Owner prior to the initiation of the abatement activities. An AWP is a variance from certain CTDPH asbestos regulatory requirements, which must provide the equivalent or a greater measure of asbestos emission control than the standard work practices prescribed by the CTDPH.
- F. The Engineer/Construction Manager/Project Monitor for this project will be TRC, Inc. for the asbestos removal portion of this project ONLY.

1.2 DESCRIPTION OF WORK

A. The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer/Construction Manager. Proceed through the sequencing of the work phases under the direction of the Engineer/Construction Manager.

B. The asbestos abatement work shall include the removal of asbestos-containing materials as specified herein. This abatement project was designed by Mr. Donald LePage, a State of Connecticut licensed Asbestos Project Designer (#000233).

Utility Room Outside of Boiler Room

Includes the removal of:

- ACM Pipe Insulation (~8LF)
- Boiler Breeching Insulation (~15 SF)

Notes:

- Refer to Asbestos Abatement Plan Drawing ASB-01 for locations of ACM listed above.
- Small closet within room was not accessible at the time of the inspection. Boiler breeching insulation is assumed within closet.

Contractor shall be responsible for removal of all walls, trim work, carpeting, etc., necessary in order to access the ACM. Asbestos removal shall be performed under full containment conditions with a pressure differential and contiguous decontamination system in accordance with CTDPH 19a-332a-5, 6 and 7, OSHA Class I and USEPA NESHAP requirements. Reoccupancy air clearance testing shall utilize Phase Contrast Microscopy (PCM) analysis, as applicable per CTDPH 19a-332a-12

Boiler Room

Includes the removal of:

• ACM Internal Boiler Materials (2 Boilers)

Notes:

- Refer to Asbestos Abatement Plan Drawing ASB-1 for locations of ACM listed above.
- Boilers were active at the time of the inspection and therefore inaccessible. Boilers to be demolished under full containment conditions.

Contractor shall be responsible for removal of all walls, trim work, etc., necessary in order to access the ACM. Asbestos removal shall be performed under full containment conditions with a pressure differential and contiguous decontamination system in accordance with CTDPH 19a-332a-5, 6 and 7, OSHA Class I and USEPA NESHAP requirements. Reoccupancy air clearance testing shall utilize Phase Contrast Microscopy (PCM) analysis, as applicable per CTDPH 19a-332a-12

Additional Notes:

Further ACM are known to exist within the building but are not expected to be impacted by the renovation project.

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Contractor is advised that the ACM is present and should take precautions so as not to disturb any suspect ACM not listed in these specifications while performing renovation activities.

Upon discovery of any previously unidentified suspect ACM during construction activities that will require impact, work shall cease immediately until the Engineer can determine the extent of any ACM impact and implement proper procedures.

Additionally, any general labor workers who may be required to work in direct contact with the existing ACM and may contact, but not disturb, the ACM, should be given OSHA Class IV asbestos awareness training in accordance with the OSHA Asbestos Standards.

1.3 <u>DEFINITIONS</u>

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

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

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

Alternative Work Practice (AWP) - State of Connecticut Department of Public Health - 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 the CTDAS/CS Project Monitor when not pre-approved. Approval of alternative work practice procedures shall not relieve the Contractor from any codes, regulations or standards required by this specification.

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

Asbestos Abatement - The removal, encapsulation, enclosure, renovation, repair, demolition or other disturbance of asbestos-containing materials except activities which are related to the removal or repair of asbestos cement pipe and are performed as defined in Section 25-32a of the Connecticut General Statutes.

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.

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

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

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

Category I Non-Friable Asbestos-Containing Material (ACM) - Asbestos-containing packings, gaskets, resilient Floor coverings and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

Category II Non-Friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

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

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

Class III Asbestos Work - Repair and maintenance operations, where ACM, including TSI and surfacing material, is likely to be disturbed.

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

Competent Person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition, for Class I and Class II work who is specifically trained in a training course which meet the criteria of EPA's Model Accreditation Plan (40 CFR 763).

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

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

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

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

DEEP - The Connecticut Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106.

DPH - The Connecticut Department of Public Health, 410 Capitol Avenue, Hartford, CT 06134.

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

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

- 1. Removal Encapsulant (can be used as a wetting agent).
- 2. Bridging Encapsulant (used to provide a tough durable surface coating to asbestoscontaining material).
- 3. Penetrating Encapsulant (used to penetrate the asbestos containing material down to substrate, encapsulating all asbestos fibers).
- 4. Lock-down Encapsulant (used to seal off "lock-down" minute asbestos fibers left on surfaces from which asbestos containing materials have been removed).

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

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

Equipment Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled transfer of materials and equipment into or out of the Work Area, typically consisting of a Washroom and a Holding Area.

Exposed - Open to view.

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

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Fixed Critical Barrier - Barrier constructed of 2" x 4" wood or metal framing 16" O.C., with 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 Design Consultant.

Friable Asbestos Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, Section 1, Polarized Light Microscopy, that when dry can be crumbled, pulverized or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

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

Glovebag Technique - A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contaminated work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of six (6) mil polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. This technique requires AWP application and may only be used if preapproved by DPH or with the approval of the Design Consultant and DPH when not pre-approved.

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

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

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

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

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

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

- 1. Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or
- 2. Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the employer's current operations, the operations were conducted by employees whose training and experience are not more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit; or
- 3. The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

Non-Friable Asbestos-Containing Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy, which when dry cannot be crumbled, pulverized or reduced to powder by hand pressure.

NPE - Negative pressure enclosure.

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

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

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

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

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

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

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

Regulated Asbestos-Containing Material (RACM) - (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

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

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

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

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

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

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

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

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

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

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

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

1.4 SUBMITTALS AND NOTICES

- A. The Contractor shall submit, in accordance with CTDPH Standard 19a-332a-3 and EPA 40 CFR 61.145 (b), proper notification using the prescribed form, to the Commissioner, State of Connecticut, Department of Public Health and EPA Region 1 not fewer than ten (10) days (10 business days) prior to the commencement of work as follows:
 - 1. Asbestos abatement projects involving greater than ten (10) linear feet (LF) or twenty-five (25) square feet (SF) of ACM (friable or non-friable) within a facility (i.e. interior abatement) and/or greater than 10 LF or 25 SF of friable ACM outside a facility, require an CTDPH Asbestos Abatement Notification. Also, abatement projects greater than one hundred sixty (160) SF, two hundred sixty (260) LF of interior/exterior or 35 cubic feet (CF) of interior/exterior Regulated Asbestos containing materials (RACM) require Notification of Demolition & Renovation to EPA Region 1.
 - 2. At sites scheduled for demolition, asbestos abatement of exterior non-friable ACM or interior abatement involving less than 10 LF or 25 SF of ACM (friable or non-friable), and/or exterior abatement involving less than 10 LF or 25 SF of friable ACM require a CTDPH Demolition Notification. In most cases, the Demolition Contractor is responsible for filing the CTDPH Demolition Notification not fewer than ten (10) days prior to the commencement of demolition. However, if a portion of the demolition activities are scheduled to be conducted in conjunction with and/or under the supervision of an Asbestos Abatement Contractor (i.e. in the event of a structure which has been condemned, structurally damaged, and/or deemed unsafe for asbestos abatement activities); then it is the responsibility of the Asbestos Abatement Contractor to submit the CTDPH Demolition Notification.
 - 3. In the event that a CTDPH Asbestos Abatement Notification and EPA Notification of Demolition & Renovation have been submitted and the subject facility is scheduled for demolition, separate Demolition Notification forms do not need to be submitted. In such cases, the submission of the CTDPH Asbestos Abatement Notification and EPA Notification of Demolition & Renovation forms shall be deemed as satisfying the requirement for the notification of the demolition of the facility.
 - 4. The Contractor filing the proper notification is responsible for all associated fees.

- 5. If the Contractor intends to dispose of ACM waste within the State of Connecticut, a copy of the CTDPH Asbestos Abatement and EPA Notification of Demolition & Renovation/Demolition Notification must also be submitted to the Department of Environmental Protection, Solid Waste Management Unit, and the Contractor must obtain a CTDEEP Special Waste Disposal authorization.
- B. Any Alternative Work Practice (AWP) specifically described in these Specifications is preapproved and is to be utilized at all times. Additional AWP methods may be used if approved by CTDPH and/or EPA and the Engineer. Should the Contractor desire to use AWP procedures that have not been pre-approved, the Contractor shall submit in writing a description of the proposed methods to the Engineer, CTDPH and/or EPA for review and approval. Alternative procedures shall provide equivalent or greater protection than procedures which they replace. The Contractor is responsible for all fees associated with filing AWP applications which have not been pre-approved. Submission of AWP applications requires a CTDPH Project Designer License. The Contractor shall not proceed with any AWP other than those listed in this Specification without approval from both the CTDPH and/or EPA and the Engineer/Owner.
- C. Seven (7) working days prior to the commencement of asbestos abatement work (Preabatement Meeting), the Contractor shall submit to the Engineer/Owner for review and acceptance and/or acknowledgment of the following:
 - 1. Copies of all required notifications.
 - 2. AWP applications/approvals.
 - 3. Permits and licenses for the removal, transport, and disposal of asbestos-containing or contaminated materials, including a CTDPH valid asbestos removal contractor's license.
 - 4. Documentation dated within the previous twelve (12) months, certifying that all employees have received USEPA Model Accreditation Plan approved asbestos worker/supervisor 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, and copies of all employees CTDPH asbestos worker and/or supervisor licenses.
 - 5. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed herein have received the following:
 - a. Medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.1101
 - b. Respirator fit testing within the previous twelve (12) months, as detailed in 29 CFR 1910.134 (for all employees who must also don a tight-fitting face piece respirator)

- 6. Copies of the EPA/State-approved certificates for the proposed asbestos landfill.
- 7. Name and qualifications of the Asbestos Abatement Site Supervisor. This individual shall be the OSHA Competent Person for the abatement activities, shall have a minimum of three years working experience as an Asbestos Abatement Site Supervisor, shall be capable of identifying existing asbestos hazards and shall have the authority to implement corrective measures to eliminate such hazards. The Asbestos Abatement Site Supervisor shall be on-site at all times asbestos abatement is occurring, shall comply with applicable Federal, State and Local regulations which mandate work practices, and shall be capable of performing the work of this contract
- D. No abatement shall commence until a copy of all required submittals have been received and found acceptable to the Engineer. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal to, and receipt of, all required paperwork by the Engineer.
- E. Provide the Engineer/Owner, within 30 days of completion of asbestos abatement, a compliance package; which shall include, but not be limited to, the following:
 - 1. Asbestos Abatement Site Supervisor job log;
 - 2. OSHA personnel air sampling data and exposure assessments;
 - 3. Completed waste shipment records.

1.5 SEQUENCE OF WORK

- A. The Contractor shall proceed in accordance with the sequence of work as directed by the Engineer/Construction Manager. Work shall be divided into convenient Work Areas, each of which is to be completed as a separate unit.
- B. The Contractor shall use the following sequence for the asbestos abatement work:
 - 1. Release of work area to Contractor.
 - 2. A visual inspection of the work area to determine pre-existing damage to facility components.
 - 3. Removal of all moveable objects from the Work Areas undergoing abatement by the Contractor.
 - 4. All temporary utilities required for the project shall be on site and operational prior to the initiation of asbestos work.
 - 5. Abatement of all asbestos-containing materials by the Contractor.
 - 6. Final visual inspections by the Project Monitor.
 - 7. Interior NPE work area air sampling by the Project Monitor for re-occupancy (if applicable).

- 8. Cleanup by the Contractor. Work Areas must be returned to their original condition or as directed by the Engineer/Project Monitor.
- 9. Removal of waste from the site.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description.
- B. No damaged or deteriorating materials shall be used. If material becomes contaminated with asbestos, the material shall be decontaminated or disposed of as asbestos-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.
- C. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating four (4) or six (6) mil thickness.
- D. Six (6) mil polyethylene disposable bags shall have pre-printed OSHA/EPA/DOT labels and shall be transparent.
- E. Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- F. Surfactant is a chemical wetting agent added to water to improve penetration and shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent. The surfactant 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.
- G. Spray equipment must be capable of mixing necessary chemical agents with water, generating sufficient pressure and volume; and equipped with adequate hose length to access all necessary work areas.
- H. Mechanical mastic removal equipment shall be suitable for the application and shall be operated in a manner which prevents damage to the underlying floor. Sanders, grinders, wire brushes and needle-gun type removal equipment shall be equipped with a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system.
- I. Containers for storage, transportation and disposal of asbestos containing waste material shall be impermeable and both air and watertight.
- J. Labels and warning signs shall conform to OSHA 29 CFR 1926.1101, USEPA 40 CFR Part 61.152, and USDOT 49 CFR Part 172 as appropriate.

- K. Encapsulant, a material used to chemically entrap asbestos fibers to prevent these fibers from becoming airborne, shall be of the type which has been approved by the Engineer. Use shall be in accordance with manufacturer's printed technical data. The encapsulant shall be clear and must be compatible with new materials being installed, if any.
- L. Glovebag assembly shall be manufactured of six (6) mil transparent polyethylene or PVC with two (2) inward projecting long sleeve gloves, an internal pouch for tools, and an attached labeled receptacle for waste.
- M. Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.
- N. Air filtration devices and vacuum units shall be equipped with HEPA filters.

2.2 TOOLS AND EQUIPMENT

- A. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance shall conform to OSHA requirements.
- 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 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. Water is filtered through a 5 micron and a 10 micron filter prior to being discharged into the city sewer/sanitary system. The contractor may need to supply their own water as the closest operating water supply is at the Visitors Center.
- E. The Contractor may need to supply electrical power to the site by either fuel operated generator(s) or temporary restoration of electrical service. Electrical power supply will be sufficient for maintaining in operation all equipment required for this project throughout the duration of the project.
- F. 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 providing 4 air changes per hour. 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 Regulated Area. The Contractor shall provide actual airflow measurement of filtration units while the unit is in place and calculate actual air exchange rates.

- G. Pressure differential monitoring equipment 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.
- 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 three micrometers in diameter or larger.
- I. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.
- J. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the Work Area shall be provided as appropriate for the work.
- K. 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 Regulated area.
- L. Mechanical mastic removal equipment shall be suitable for the application and shall be operated in a manner which prevents excessive damage to the underlying floor.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The Abatement Contractor/Subcontractor shall possess a valid State of Connecticut Asbestos Contractor License. Should any portion of the work be subcontracted, the subcontractor must also possess a valid State of Connecticut Asbestos Contractor License. The Asbestos Abatement Site Supervisor employed by the Contractor shall be in control on the job site at all times during asbestos abatement work. All employees of the Contractor who shall perform work (i.e. Asbestos Abatement Site Supervisor, Asbestos Abatement Worker) shall be properly certified/licensed by the State of Connecticut to perform such duties.
- B. All labor, materials, tools, equipment, services, testing, 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, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.
- C. Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site for safety reasons. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

D. The Contractor shall:

- 1. Shutdown and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to the other areas of the building.
- 2. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.
- 3. Coordinate all power and fire alarm isolation with the appropriate representatives.
- 4. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.
- E. If sufficient electrical service is unavailable, the Contractor may need to supply electrical power to the site by fuel operated generator(s). Electrical power supply shall be sufficient for all equipment required for this project in operation throughout the duration of the project. If the Contractor elects to supply electrical power to the work site through the use of generators, the Contractor shall ensure that each work area is a manageable size such that removal, final cleaning and re-occupancy testing can be accomplished within one work shift while negative air machines are operating.
- F. Negative pressure must be continuously maintained in each work area, until the area achieves satisfactory re-occupancy criteria and is approved by the Project Monitor to be deregulated. Negative air pressure must be maintained twenty-four (24) hours per day and the Contractor shall establish temporary electrical service to the site, rather than utilize generators.
- G. Water service may not be available at the site. Contractor shall supply sufficient water for each shift to operate the decontamination shower units as well as to maintain the work areas adequately wet.
- H. Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.
- I. Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.
- J. Data provided regarding asbestos sampling conducted throughout the structure(s) is for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the presence and location of all asbestos containing materials. The Contractor shall verify all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA,

- USDOT, CTDPH and CTDEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.
- K. The Owner will provide a Project Monitor to oversee the activities of the Contractor. No asbestos work shall be performed until the Project Monitor is on-site. Pre-abatement, during abatement and post-abatement air sampling will be conducted as deemed necessary by the Project Monitor. Waste stream testing will be performed, as necessary, by the Project Monitor prior to waste disposal.

3.2 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

- A. Pre-clean the work areas using HEPA filtered equipment (vacuum) and/or wet methods as appropriate, collecting and properly containing all dust and debris as asbestos-containing/asbestos contaminated waste. 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. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.
- B. After pre-cleaning, movable objects shall be removed from the work areas with the utmost care to prevent damage of any kind and relocated to a temporary storage location coordinated with the Engineer. The Contractor is responsible for protecting all fixed objects that are permanent fixtures or are too large to remove and remain inside the regulated Area. Fixed objects shall be enclosed with one layer of six (6) mil polyethylene sheeting sealed with tape.
- C. Where non-ACM insulation exists within a Regulated Area, the Contractor has the option of removing the non-ACM insulation material and disposing of as ACM debris, or decontaminating and protecting non-ACM insulation material with two (2) layers of six (6) mil polyethylene sheeting. Any non-ACM insulation removed shall be replaced with new material of equal or better quality at the Contractor's expense.

3.3 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. The Contractor shall establish contiguous to the Regulated Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series, as detailed below. Access to the Regulated Area shall only be through this enclosure.
- B. Access between rooms in the Worker Decontamination Enclosure System shall be through airlocks. Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be contiguously connected with taped airtight edges, thus ensuring the sole source of airflow originates from outside the regulated areas, once the negative pressure differential within the Regulated Area is established.
- 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. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water through the use of electric hot water heaters supplied by the Contractor. No worker or other person shall leave a Regulated Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an approved sanitary drain. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate.

3.4 EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

- A. The Contractor shall establish contiguous to the Regulated Area an Equipment/Waste Removal Decontamination Enclosure System consisting of two (2) totally enclosed chambers divided by a double flap curtained opening. Other effective designs are permissible. This enclosure must be constructed so as to ensure that no personnel enter or exit through this unit.
- B. The Contractor shall ensure that no personnel or equipment be permitted to leave the Regulated Area until proper decontamination procedures (including HEPA vacuuming, wet wiping and showering) to remove all asbestos debris have occurred. No asbestoscontaminated materials or persons shall enter the Clean Room.

3.5 SEPARATION OF WORK AREAS FROM OCCUPIED AREAS

- A. Seal off all windows, doorways, skylights, ducts, grilles, diffusers, vents, light fixtures, electrical receptacles, suspended ceiling tile systems and any other openings between the Regulated Area and the uncontaminated areas outside of the Regulated Area, including the outside of the building, with critical barriers consisting of a minimum of one (1) layer of six (6) mil polyethylene sheeting securing the edges with tape. Doorways and corridors which will not be used for passage during work and separate the regulated areas from occupied areas must be sealed with fixed critical barriers constructed of 2" x 4" wood or metal framing 16" O.C., with ½" plywood on the occupied side and two layers of six (6) mil polyethylene sheeting on the Regulated Area side to prevent unauthorized access or air flow.
- B. The Contractor shall create a negative pressure differential in the range of 0.02 to 0.04 inches of water column between the Regulated Area and surrounding areas by the use of acceptable negative air pressure equipment. 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 providing 4 air changes per hour. The Contractor shall provide a sufficient quantity of HEPA air filters to maintain the pressure differential throughout the duration of the project. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. Continuously monitor the pressure differential between the Regulated Area and surrounding area to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column. The Contractor shall provide actual air flow measurement of filtration units while the unit is in place and

- calculate actual air exchange rates. No air movement system or air filtering equipment shall discharge unfiltered air outside the Regulated Area.
- C. A Negative Pressure Enclosure (NPE) shall be constructed via covering of 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 wall. Cover wall 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 at wall-to-floor joints. Protect carpet and floor tile with two additional layers of six (6) mil reinforced polyethylene in addition to the prior two layers required.
- D. Conspicuously label and maintain emergency and fire exits from the Regulated Area satisfactory to fire officials.
- E. 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 or building occupant may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of workplace enclosure barriers.

3.6 ALTERNATE EXTERIOR NON-FRIABLE ASBESTOS SET-UP PROCEDURES

A. In lieu of the establishment of a negative pressure enclosure (NPE) system as described by CTDPH Sections 19a-332a-5(c), 5(d), 5(e), and 5(h), non-friable ACM will be removed from exterior work areas within an outdoor Regulated Area(s). The regulated work area will be established by the use of appropriately labeled barrier tape and postings in compliance with CTDPH 19a-332a-5(a) as well as OSHA 29 CFR 1926.1101. A remote personnel decontamination unit as specified in Section 19a-332a-6 will be required. This method shall only be utilized provided exposure assessment air sampling data collected during the removal of the exterior non-friable materials indicates that the exposure levels during removal of such materials do not exceed 0.1 asbestos f/cc. Should exposure assessment air sampling data exceed this level, and engineering efforts to reduce the airborne fiber levels not be successful in reducing the levels to less than 0.1 f/cc, removal shall occur within these areas under full containment conditions.

3.7 ALTERNATE "SPOT REPAIR" ASBESTOS PROCEDURES

A. In lieu of the establishment of a negative pressure enclosure (NPE) system as described by CTDPH Sections 19a-332a-5(c), 5(d), 5(e), and 5(h), less than 3 LF or 3 SF of ACM will be removed as a "spot repair" in accordance with CTDPH Section 19a-332a-10. A regulated area will be established by the use of appropriately labeled barrier tape and postings in compliance with CTDPH 19a-332a-5(a) as well as OSHA 29 CFR 1926.1101. A remote personnel decontamination unit as specified in Section 19a-332a-6 will be required. Air-tight barriers will be constructed to assure that asbestos fibers released during abatement activities are contained within the work area. (Glovebags are permitted, as specified below.) ACM will be adequately wet prior to disturbance and remain wet until placed in leak-tight container. Following abatement, clean-up methods within the work

- area will include HEPA-filtered vacuuming or wet cleaning techniques until no visible residue remains.
- B. Glovebags utilized to perform "spot repair" activities on asbestos containing pipe insulation/mudded fitting insulation, in conformance with OSHA 29 CFR 1926.1101(g)(5)(ii), shall be:
 - 1. constructed of 6 mil poly, seamless at bottom, unmodified
 - 2. installed so that it completely covers the circumference of pipe or other structure where work is to be done, with impermeable dropcloths placed on all surfaces beneath the work area
 - 3. smoke-tested for leaks and sealed, as needed
 - 4. used only once, may not be moved
 - 5. used only on surfaces with temperatures <150°F
 - 6. collapsed by removing air via HEPA-vacuum, prior to disposal
 - 7. adhered to surfaces which are intact, surfaces with loose and friable material shall be sealed in two layers of 6 mil poly or otherwise rendered intact
 - 8. capable of sustaining integrity at connection site to attached waste bag, which must have equivalent of sliding valve for disconnection (as applicable)
 - 9. performed by a minimum of two (2) persons
- C. Glovebags may also be used for "spot repair" abatement procedures involving additional materials (e.g. floor tile/linoleum, transite, etc.) provided that the glovebag is capable of fully enclosing the material to be removed.

3.8 PERSONNEL PROTECTION

- A. The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with OSHA, USEPA, USDOT, CTDEEP and CTDPH regulations.
- B. The Contractor shall provide and require all workers to wear protective clothing in the Regulated Areas where asbestos fiber concentrations may reasonably be expected to exceed the OSHA established Permissible Exposure Limits (PEL) or where asbestos contamination exists. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.
- C. Respiratory protection shall be provided and selection shall conform to the requirements of OSHA 29 CFR 1910.134 and 29 CFR 1926.1101 as well as the requirements of the CTDPH regulations and 42 CFR Part 84. A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134.
- D. All other necessary personnel protective equipment (i.e. hardhat, work boots, safety glasses, hearing protection, etc.) required to perform the asbestos abatement work activities shall conform to all applicable federal, state and local regulations.
- E. All other qualified and authorized persons entering into a Regulated Area (i.e. Project Monitor, Regulatory Agency Representative) shall adhere to the requirements of personnel protection as stated in this section.

3.9 ASBESTOS ABATEMENT PROCEDURES

- A. The Asbestos Abatement Site Supervisor, as the OSHA Competent Person shall be at the site at all times.
- B. The Contractor shall not begin abatement work until authorized by the Project Monitor, following a pre-abatement visual inspection.
- C. All workers and authorized persons shall enter and leave the Regulated Area through the Worker Decontamination Enclosure System, leaving contaminated protective clothing in the Equipment Room for reuse or disposal of as asbestos contaminated waste. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in a Regulated Area.
- D. During removal, the Contractor shall spray asbestos materials with amended water using airless spray equipment capable of providing a "mist" application to reduce the release of airborne fibers. 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 Regulated Area. Do not "flood" the area with hose type water supply equipment with the potential to create water releases from the regulated area.
- E. The Contractor shall continue to spray the asbestos materials with amended water, as necessary, throughout removal activities to ensure the asbestos materials remain adequately wet. The asbestos materials shall not be allowed to dry out.
- F. In order to minimize airborne asbestos concentrations inside the Regulated Area, the Contractor shall remove the adequately wetted asbestos in manageable sections. In addition, asbestos materials removed from any elevated level shall be carefully lowered to the floor.
- G. The Contractor shall promptly place the adequately wet asbestos material in disposal containers (six (6) mil polyethylene bags/fiber drum/poly-lined dumpsters, etc.) as it is removed. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape. As the disposal containers are filled, the Contractor shall promptly seal the containers, apply caution labels and clean the containers before transportation to the equipment decontamination area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Small components and asbestos-containing waste with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. All waste containers shall be leaktight, (typically consisting of two layers of 6 mil poly (or bags)), and shall be properly labeled and placarded with OSHA Danger labels, DOT shipping labels, markings and placards and USEPA NESHAP generators labels. Containers shall be decontaminated by wet cleaning and HEPA vacuuming within the equipment decontamination area prior to exiting the regulated area. Wet clean each container thoroughly before moving to Holding Area.
- H. If at any time during asbestos removal, the Project Monitor should suspect contamination of areas outside the Regulated Area, the Contractor shall immediately 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/or visual inspections determine decontamination.
- I. After completion of abatement 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. Cleaning shall also include the use of HEPA filtered vacuum equipment.

3.10 CLEAN-UP PROCEDURES

- A. The Contractor shall also remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene engineering controls/barriers.
- B. The Contractor shall clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet sponging or wiping before moving such items into the Equipment Decontamination Enclosure System for final cleaning and removal to uncontaminated areas.
- C. The Contractor shall remove contamination from the exteriors of the air filtration devices, scaffolding, ladders, extension cords, hoses and other equipment inside the Regulated Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning. The Contractor shall wet wipe the Regulated Area 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. For those Regulated Areas where lead is also disturbed, the cleaning shall also include a wet washing with a high phosphate detergent solution and HEPA vacuuming. Waste water shall be filtered using best available technology into leak-proof containers prior to being transported to a sanitary sewer for discharge.
- D. Once the Regulated Area surfaces have dried, the Project Monitor shall perform a thorough post abatement visual inspection utilizing protocols from the ASTM Standard E1368-90 Standard Practice for Visual Inspection of Asbestos Abatement Projects. All surfaces within the Regulated Area, including but not limited to ledges, beams, and hidden locations shall be inspected for visible residue. Evidence of asbestos contamination identified during this inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense, until the standard of cleaning is achieved.
- E. Once the area has received a satisfactory post-abatement visual inspection, any equipment, tools or materials not required for completion of the work, shall be removed by the Contractor from the Regulated Area. Negative air filtration devices shall remain in place and operating for the remainder of the clean-up operation.
- F. Following the post-abatement visual, the Contractor shall apply a lock-down encapsulant to all surfaces within the Regulated Area from which asbestos has been removed and the cleaned inner layer of polyethylene.

3.11 AIR MONITORING REQUIREMENTS

A. The Contractor shall:

- 1. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.
- 2. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA 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. The Project Monitor, acting as the representative of the Engineer during abatement activities, will:
 - 1. Collect air samples in accordance with the current revision of the NIOSH 7400 Method of Air Sampling for Airborne Asbestos Fibers while overseeing the activities of the Abatement Contractor. Frequency and duration of the air sampling during abatement will be representative of the actual conditions at the abatement site. The size and configuration of the asbestos project will be a factor in the number of samples required to monitor the abatement activities and shall be determined by the Project Monitor. The following schedule of samples may be collected by the Project Monitor:
 - a. Pre-Abatement (Optional)
 - i. Background areas
 - ii. Area(s) adjacent to Work Area(s)
 - iii. Work Area(s)
 - b. During Abatement (Optional)
 - i. At the exhaust of air filtering device
 - ii. Within Regulated Area(s)
 - iii. Area(s) adjacent to Regulated Areas(s) (exterior to critical barriers)
 - iv. At the Decontamination Enclosure System
 - c. Post-Abatement (re-occupancy air clearance testing) (REQUIRED)
 - i. Interior Regulated NPE Area At least five (5) per homogenous area

Abatement Activity	Pre- Abatement	During Abatement	Post- Abatement
Greater than 160 SF/260 LF – Interior	PCM	PCM	TEM
Greater than 3 LF/3 SF and Less than 160 SF/260 LF – Interior	PCM	PCM	PCM
Spot Removal and Glovebag Procedures (<3 LF/3 SF)		PCM	
Exterior Friable/Non-Friable		PCM	

C. If air samples collected outside of the Regulated Area during abatement activities indicate airborne fiber concentrations greater than original background levels, or greater than 0.1 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Regulated Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

3.12 POST-ABATEMENT RE-OCCUPANCY PROCEDURES

- A. For interior NPE Regulated Areas, clearance air sampling will be performed by the Project Monitor as specified in the Air Sampling Schedule. Clearance sampling will be undertaken using aggressive sampling techniques. Sampling and analysis of clearance samples will 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 Regulated Area passes the re-occupancy clearance, controls established by these Specifications may be removed.
 - 1. Air sampling will not begin until after the area has received an acceptable post abatement visual inspection, encapsulation has been completed, and no visible water, liquid encapsulant or condensation remain in the Regulated Area.
 - 2. Sampling equipment will be placed at random throughout the Regulated Area.
 - 3. The following aggressive air sampling procedures will be used within the Regulated 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 Regulated Area.
 - b. Pre-calibrate the sampling pump flow rates through the use of a rotameter calibrated to a primary standard.
 - c. Start the sampling pumps and sample for the required time.
 - d. Post-calibrate the sampling pump flow rates.
 - 4. 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 (1,200 liters).
 - 5. Analysis shall follow the requirements of CTDPH 19a-332a-12.
 - 6. Each homogeneous Regulated Area which does not meet the clearance criteria shall be thoroughly re-cleaned using HEPA vacuuming and/or wet cleaning, with the negative pressure ventilation system in operation. New samples shall be collected in the Regulated Area as described above. The process shall be repeated until the Regulated 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 Regulated Area, the release criterion shall be applied independently to each Regulated Area.
- 8. These clearance sampling procedures may also be implemented for exterior NPE work areas at the discretion of the Engineer.

3.13 POST ABATEMENT WORK AREA DEREGULATION

- A. The Contractor shall 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. All waste generated during this disassembly process shall be discarded as ACM waste.
- B. A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain.
- C. The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer.

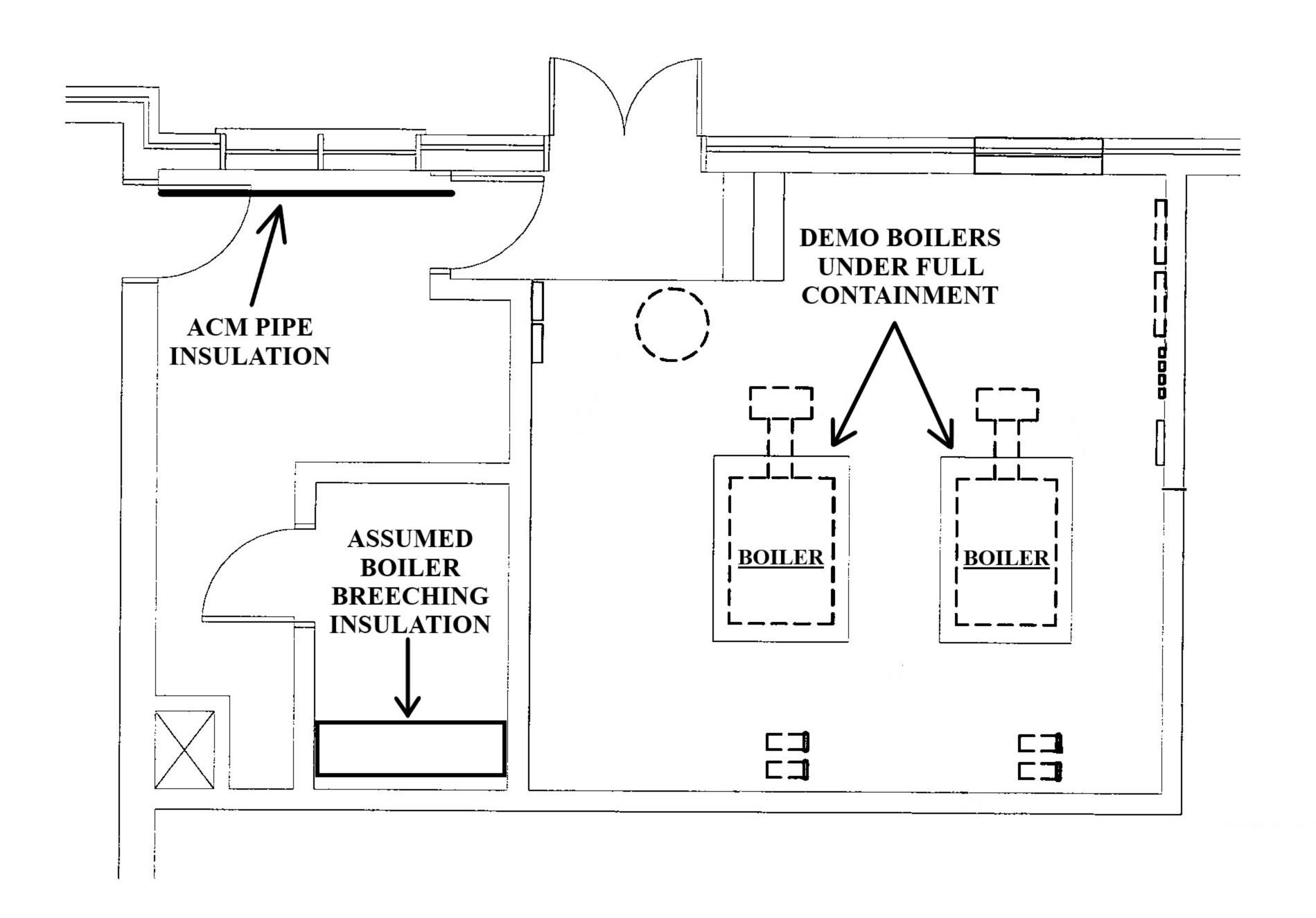
3.14 WASTE DISPOSAL

- A. Unless otherwise specified, all removed materials and debris resulting from execution of this project shall become the responsibility of the Contractor and 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.
- B. Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place.
- C. OSHA "Danger" signs must be attached to vehicles used to transport asbestos-containing waste prior to loading ACM waste. The signs must be posted so that they are plainly visible.
- D. Waste haulers and disposal facilities utilized shall match those indicated on the submitted CTDPH notification.
- E. Ensure all waste containers (bags, drums, etc.) are properly packed, sealed and labeled with USEPA NESHAP generator labels, OSHA danger labels and DOT shipping labels. For each shipment of ACM waste, the Contractor shall complete an EPA-approved asbestos waste shipment record.
- F. Authorized representatives signing waste shipment records on behalf of the generator must have USDOT Shipper Certification training in accordance with HMR 49 CFR Parts 171-180.

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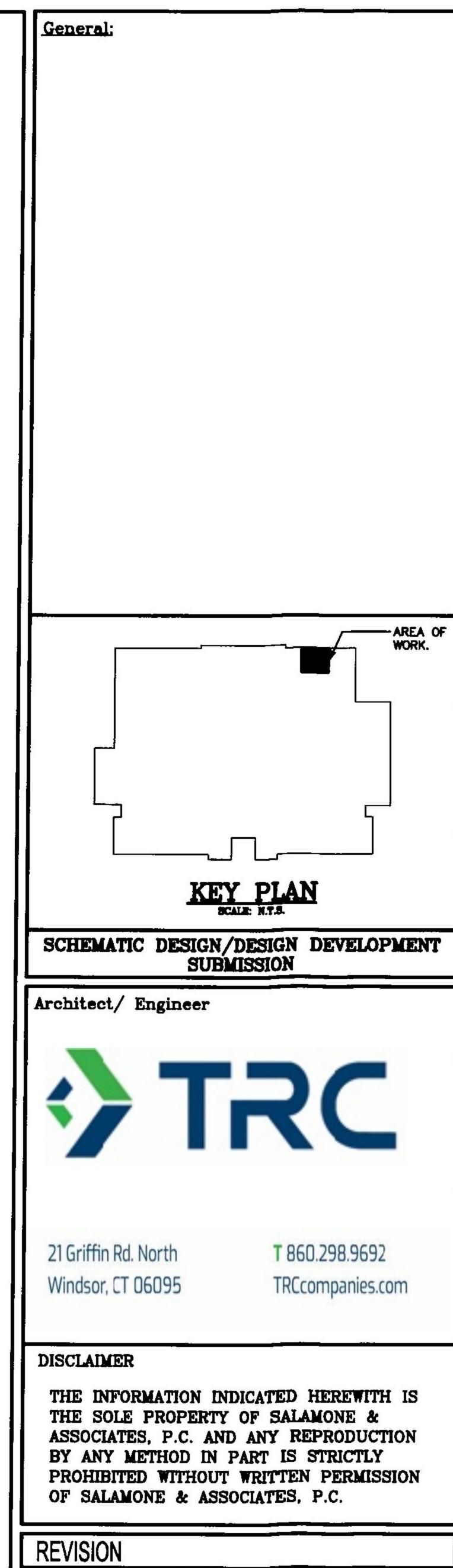
- G. Transport vehicles hauling ACM waste shall have appropriate USDOT placards visible on all four (4) sides of the vehicle.
- H. The Contractor shall dispose of asbestos-containing and/or asbestos contaminated material at an EPA authorized site and must be in compliance with the requirements of the Special Waste Provisions of the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.
- I. Any asbestos-containing and/or asbestos-contaminated waste materials which also contain other hazardous contaminants shall be disposed of in accordance with the EPA's Resource Conservation and Recovery Act (RCRA), CTDEEP and ConnDOT requirements. Materials may be required to be stored on-site and tested by the Project Monitor to determine proper waste disposal requirements.

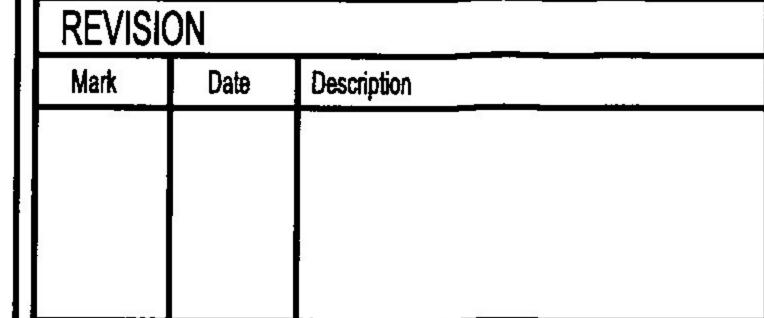
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ENLARGED BOILER ROOM ASBESTOS ABATEMENT PLAN

SCALE: 1/4"=1'-0"





Drawn By:

App'd By: JAS

Scales: AS NOTED

File As:



STATE OF CONNECTICU
MILITARY DEPARTMEN
Facilities Management Office
366 Broad Street Hertford, CT 56459
366 MANAGEMENT FOR S66504,4837

PROJECT
NEW LONDON ARMORY
REMOVE AND REPLACE BOILERS AND
INSTALL HOT WATER HEATERS
249 BAYONET STREET NEW LONDON. CT

DRAWING TITLE

ENLARGED BOILER ROOM

ASBESTOS ABATEMENT PLAN

MAY 21, 2019

DRAWING NO.

ASB - 1

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PART 1 GENERAL

1.1 SCOPE

- A. Work under this item shall include the special handling measures and work practices required for renovation (construction) activities impacting various materials containing or covered by lead paint, including the loading, transportation and final off-site disposal of non-hazardous and/or hazardous lead construction waste, and the subsequent cleaning of the affected environment. Lead paint includes paint found to contain <u>any</u> detectable amount of lead by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF).
- B. All activities shall be performed in accordance with, but not limited to, the current revision of the Occupational Safety and Health Administration (OSHA) Lead in Construction Regulations (29 CFR 1926.62), the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) Hazardous Waste Regulations (40 CFR Parts 260 through 274), the Connecticut Department of Energy and Environmental Protection (CTDEEP) Hazardous Waste Regulations (22a-209-1 and 22a-449(c)) and the United States Department of Transportation (USDOT) Hazardous Materials Regulations (49 CFR Parts 171 through 180).
- C. All activities shall be performed by individuals with appropriate levels of OSHA lead awareness and hazard communication training and shall supervised by the Contractors Competent Person on the job site at all times. The Contractors Competent Person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- D. Hazardous lead debris shall be transported from the Project by a licensed hazardous waste transporter and disposed of at an EPA permitted hazardous waste facility within 90 days from the date of generation.
- E. Deviations from these Specifications require the written approval of the Engineer/Construction Manager.
- F. The Engineer/Construction Manager/Project Monitor for this project will be TRC, Inc. for the asbestos/lead paint portion of this project ONLY.

1.2 DESCRIPTION OF WORK

A. All work impacting the lead painted materials identified below shall be conducted within an established Regulated Area with a remote wash facility/decontamination system and the OSHA Lead in Construction Standard. In accordance with 29 CFR 1926.62, engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the Regulated Area and limit the generation of airborne lead. All wastes containing lead paint shall be properly contained and secured for storage, transportation and disposal.

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- B. Data for random lead testing conducted on surfaces throughout the buildings as well as any waste characterization results are available from the Engineer for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the extent of lead painted materials. The Contractor shall be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT and CTDEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.
- C. The Contractor shall conduct exposure assessments for all tasks which impact lead paint in accordance with OSHA 29 CFR 1926.62(d) and shall implement appropriate personal protective equipment until negative exposure assessments are developed.
- D. The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer/Construction Manager. Proceed through the sequencing of the work phases under the direction of the Engineer/Construction Manager.

Phase 1 – Non-metallic Components to Be Impacted

➤ Lead paint has been identified on various non-metallic components throughout the facility including concrete window sills, and block walls. All renovation/demolition work specified in other areas of these Specifications impacting those materials shall be conducted within an established lead control (regulated) area with a remote handwash facility/decontamination system in accordance with OSHA Lead in Construction Standards. Engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the work area and limit the generation of airborne lead. Lead painted debris generated from the renovation/demolition of those materials, shall be containerized and stored on-site with the remainder of the non-metallic building waste materials.

Phase 2 – Metal Components to Be Impacted

➤ Lead paint has been found, or assumed, on various metal components throughout the facility including the boilers conduit, pipes, window components, door frames, I-beams and railings. All renovation/demolition work specified in other areas of these Specifications impacting those materials shall be conducted within an established lead control (regulated) area with a remote handwash facility/decontamination system in accordance with OSHA Lead in Construction Standards. Engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the work area and limit the generation of airborne lead. All steel and metal generated from the renovation/demolition of the building shall be segregated and recycled as scrap metal at an approved facility. The recycling of scrap metal (regardless of lead paint concentration) is exempt from USEPA RCRA and CTDEP Hazardous Waste Regulation.

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Phase 3 – Surface Preparations

Contractor shall be responsible for any surface preparation required in areas where repainting or refinishing is specified. Surface preparation techniques such as sanding, sandblasting, scraping, powerwashing, etc. which are utilized on surfaces coated with lead paint must be conducted in accordance with the OSHA worker protection and USEPA RCRA/CTDEP waste disposal standards. All work shall be conducted within an established lead control (regulated) area with a remote handwash facility/decontamination system. Engineering controls and work practices shall be utilized to prevent the spread of lead dust and debris beyond the work area and limit the generation of airborne lead.

1.3 DEFINITIONS

Abatement: Any set of measures designed to eliminate lead hazards in accordance with the established CTDPH and OSHA standards, including, but not limited to, the encapsulation, replacement, removal, enclosure or covering of paint, plaster, soil, dust or other material containing toxic levels of lead and all preparation, clean-up, disposal and re-occupancy clearance testing.

Abatement Area: A room or area isolated with containment in accordance with CTDPH Section 19a-111-4(c)(2) where lead abatement is occurring.

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

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

Agency: The authoritative force, usually at a state level, or their representative.

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

Biological Monitoring: The analysis of a person's blood and/or urine to determine the level of lead contamination in the body.

Certificate: A document issued by the department indicating successful completion of an approved training course.

Certified Historic Property: Any building, structure, or site which has been determined historic by the Connecticut Historical Commission.

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Certified Lead Abatement Supervisor: Any person who completes an appropriate approved training course and obtains a certificate as a lead abatement supervisor from the department. A lead abatement supervisor oversees lead abatement activities.

Certified Lead Abatement Worker: Any person who completes an appropriate approved training course and obtains a certificate as a lead abatement worker from the department. A lead abatement worker performs lead abatement activities.

Certified Lead Inspector: Any lead consultant who completes an appropriate approved training course and obtains a certificate as a lead inspector from the department. A certified lead inspector conducts inspections to determine the presence of lead in paint, other surface coverings and various environmental media.

Certified Lead Inspector Risk Assessor: Any lead consultant who completes an appropriate approved training course and obtains a certificate as a lead inspector risk assessor from the department. A certified lead inspector risk assessor conducts inspections and collects and interprets information to assess the level of risk from lead hazards.

Certified Lead Planner-Project Designer: Any lead consultant who completes an appropriate approved training course and obtains a certificate as a lead planner-project designer from the department. A certified lead planner-project designer designs lead abatement and management activities.

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

Chewable Surface: Any projection one-half (0.5) inch or greater from an interior or exterior surface up to five (5) feet in height that can be mouthed by a child as defined in CTDPH 19a-111-1.

Child: A person under the age of six (6).

Common Area: A room or area that is accessible to all occupants in a building (e.g. hallway, stairwell).

Competent Person: An individual with 32 hours of lead abatement training capable of identifying existing and predictable lead hazards, identifying corrective measures to eliminate them, and who has authorization to take prompt measures to eliminate them. The duties of the competent person include at least the following: controlling entry to and exit from the lead control area; ensuring that all employees working within the lead control area wear the appropriate personal protective equipment, are trained in the use of appropriate methods of exposure control, and use the hygiene facilities and decontamination procedures specified; and ensuring that engineering controls in use are in proper operating condition and are functioning properly.

Complete Abatement: Abatement of all lead-based paint, inadequately covered lead-contaminated soil and lead-contaminated dust inside or outside a dwelling or building. All of

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

Containment: A process for protecting workers, residents, and the environment by controlling exposures to lead dust and debris created during abatement.

CTDEEP: The Connecticut Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106.

CTDPH: The Connecticut Department of Public Health, 410 Capitol Avenue, Hartford, CT 06106.

Department: The State of Connecticut Department of Public Health.

Defective Surface: Peeling, flaking, chalking, scaling, or chipping paint; or paint over crumbling, cracking, or falling plaster; or paint over a defective or deteriorating substrate; or paint that is damaged in any manner such that a child can get paint from the damaged area. Defective may be termed as Deteriorated and may be classified as either fair or poor condition.

Differential Pressure: A difference in the static air pressure between the prepared work area and the occupied area developed by the use of HEPA filtered exhaust fans.

Dwelling: Every building or shelter used or intended for human habitation, including exterior surfaces and all common areas thereof, and the exterior of any other structure located within the same lot, even if not used for human habitation.

Dwelling Unit: A room or group of rooms within a dwelling arranged for use as a single household by one or more individuals living together who share living and sleeping facilities.

Elevated Blood Lead Level: A blood lead concentration equal to or greater than twenty (20) micrograms per deciliter (μ g/dl) as defined in CTDPH Regulation 19a-111-1. A blood lead concentration equal to or greater than forty (40) micrograms per deciliter (μ g/dl) as defined in OSHA Standard 29 CFR 1926.62.

Encapsulation: The resurfacing or covering of surfaces and sealing or caulking with durable materials so as to prevent or control chalking, flaking, lead-containing substances from being part of building dust or accessible to children. Painting or wallpapering is not considered encapsulation.

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.

Engineer: - The Connecticut Department of Administrative Services, 450 Columbus Boulevard, Hartford, CT or their authorized representative, TRC Environmental Corporation, 5 Waterside Crossing, Windsor, Connecticut 06095.

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.

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EPA: The U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

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 Engineer, 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:

- A. cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness, or
- B. pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

As defined in the regulations, a 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.

HEPA Filter: A high-efficiency particulate accumulator (HEPA) filter is capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.

High Phosphate Detergent: Detergent which contains at least five percent tri-sodium phosphate (TSP).

HUD: The U.S. Department of Housing and Urban Development.

ICP (**Inductively Coupled Plasma**): An analytical technique capable of identifying metal constituents including lead.

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.

Intact Surface: A defect-free surface with no loose, peeling, chipping, or flaking paint or paint substrate. A surface not damaged in any way such that a child can get paint from the damaged area.

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: Metallic lead, all inorganic lead compounds and organic lead soaps.

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

Lead Abatement: A comprehensive process of eliminating exposure to lead paint, lead soil and lead dust which includes removal, encapsulation, enclosure, testing, measures for worker protection, containment of dust and debris, cleanup, and disposal of waste.

Lead Based Paint: Paints or other surface coatings containing a toxic level of lead as defined in State of Connecticut DPH Regulation 19a-111-1.

Lead Based Paint Hazard (Lead Hazards): Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil or lead-based paint that 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 (Lead Hazard Control): Activities to control and eliminate lead-based paint hazards, including interim controls, abatement and complete abatement.

Lead-Contaminated Dust: Dust containing lead at or above the levels of acceptance as defined in State of Connecticut DPH Regulation 19a-111.

Lead-Contaminated Soil: Soil containing lead at or above the levels of acceptance as defined in State of Connecticut DPH Regulation 19a-111.

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 CTDPH, 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 Management Plan: A written plan that describes how an intact surface with lead-based paint will be monitored to ensure that defective paint surfaces will be identified and abated.

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Licensed Lead Abatement Contractor: Any entity that contracts to perform lead hazard abatement and obtains a license from the department to conduct such abatement work. The contractor uses certified lead abatement supervisors to oversee such lead abatement activities and certified lead abatement workers to perform such lead abatement activities.

Licensed Lead Consultant Contractor: Any entity that contracts to perform lead hazard reduction consultation work utilizing an inspector, inspector risk assessor and/or planner-project designer and obtains a license from the department to conduct such consultation work.

Lead-Safe Dwelling: A lead-safe dwelling contains intact, encapsulated or enclosed lead-based paint, adequately covered lead-contaminated soil and has interior dust and inadequately covered exterior soil below the applicable CTDPH, HUD and EPA standards.

Manifest: The shipping document used to track hazardous waste, EPA Form 8700-22, originated and signed by the generator in accordance with the instructions included in the Appendix to 40 CFR Part 262 and Section 102 of CTDEP Regulations.

μ; Microgram: The prefix "micro-" means 1/1,000,000 of a gram or 1/1000 of a milligram.

Movable Object: A unit of equipment or furniture in the work area which can, as determined by the Engineer, be removed from the work area.

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 ($\mu g/m^3$) 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.

Pre-Clean: The process of cleaning an area before lead abatement activities begin to ensure all dust, paint chips, and debris in the work area are properly contained and disposed of.

Project Monitor: A professional capable of conducting air monitoring and wipe sampling. This individual is responsible for recognition of technical deficiencies in worker protection equipment and procedures during both planning and on-site phases of an abatement project. The Project Monitor shall meet the training requirements in lead abatement or inspection.

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

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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-leaded components free of lead paint.

Risk Assessment: An 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 the age of six (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.

Substrate: The underlying surface beneath a paint or varnish.

Toxic Level of Lead: When present in a dried paint, plaster or other accessible surface in a residential dwelling contains more than 0.50 percent lead by dry weight as measured by atomic absorption spectrophotometry (AAS), graphite furnace atomic absorption spectrophotometry (GFAAS), or inductively coupled plasma atomic emission spectrophotometry (ICP-AES) by a laboratory approved by the department for lead analysis, or more than 1.0 milligrams per square centimeter of surface as measured on site by an X-ray fluorescence analyzer as defined in CTDPH 19a-111-1.

Toxicity Characteristic Leaching Procedure (TCLP): A laboratory analytical method (EPA Test Method SW-846, Method 1311) for analyzing the waste stream to determine toxicity; the results are provided in milligrams per liter of extract (mg/l). For the 8 RCRA metals, measurements above the following values indicate that the waste is hazardous:

<u>Parameter</u>	<u>arameter</u> <u>mg/l</u> <u>Parameter</u>		mg/l
Arsenic	5.0	Lead	5.0
Barium	100.00	Mercury	0.2
Cadmium	1.0	Selenium	1.0
Chromium	5.0	Silver	5.0

TriSodium Phosphate (TSP): A specific lead-specific detergent known to perform well in the clean-up of lead-dust when used in solution.

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

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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 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.

1.4 SUBMITTALS AND NOTICES

- A. Prior to the start of <u>any</u> work that will generate hazardous lead waste above conditionally exempt small quantities (greater than 100 kg/month or greater than 1000 kg at any time), the Contractor shall obtain from the Engineer/CTDEEP a temporary EPA Hazardous Waste Generators ID, unless otherwise directed by the Engineer.
- B. Prior to the generation of any hazardous waste, provide a copy of the USEPA permit for disposal of hazardous lead bearing waste for each proposed hazardous waste treatment storage disposal facility. Also provide a copy of each proposed hazardous waste transporters current USDOT Certificate of Registration and current Hazardous Waste Transporter permits for the State of Connecticut, the hazardous waste destination state and any other applicable states.
- C. Fifteen (15) working days prior to beginning work that impacts lead paint, the Contractor shall submit the following to the Engineer:
 - 1. Work plan for work impacting lead paint including engineering controls, methods of containment of debris and work practices to be employed, as needed, to minimize employee exposure and prevent the spread of lead contamination outside the Regulated Area.
 - 2. For projects when the intent is to mitigate lead hazards and provide lead-safe conditions for building occupants, a valid CTDPH Lead Abatement Contractor License.
 - 3. Copies of all employee certificates, dated within the previous twelve (12) months, relating to OSHA lead awareness and hazard communication training and training in the use of lead-safe work practices. SSPC, HUD LSWP and USEPA RRP training programs may be deemed acceptable as meeting these requirements if it can be demonstrated that such training addressed all required OSHA topics.
 - 4. Name and qualifications of Contractor's OSHA Competent Person under 29 CFR 1926.62.

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- 5. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed therein have received the following:
- a. medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.62:
- b. biological monitoring within the previous six (6) months, as required in 29 CFR 1926.62;
- c. respirator fit testing within the previous twelve (12) months, as required in 29 CFR 1910.134 (for those who don a tight-fitting face piece respirator)
- 6. Name of proposed waste recycling facility for lead-painted asphalt, brick, stone, and concrete that meets CT Remediation Standard Regulations (RSR) GA/Residential Criteria. If these materials do not meet GA/Residential Criteria, they will be disposed of as a non-hazardous construction and demolition (C&D) waste.
- 7. Names of the proposed non-hazardous construction and demolition (C&D) lead debris bulky waste disposal facility (CTDEEP-permitted Solid Waste landfill)
- 8. Names of the proposed scrap metal recycling facilities. The Contractor shall submit to the Engineer all documentation necessary to demonstrate the selected facility is able to accept lead-painted scrap metal.
- 9. Negative exposure assessments conducted within the previous 12 months documenting that employee exposure to lead for each task is below the OSHA Action Level of 30 $\mu g/m^3$. If a negative exposure assessment has not been conducted, the Contractor shall submit its air monitoring program for the work tasks.
- D. No activity shall commence until all required submittals have been received and found acceptable to the Engineer/Owner. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal of acceptable documentation to, and review by, the Engineer/Owner.
- E. Provide the Engineer/Owner, within thirty (30) days of completion of the project site work, a compliance package; which shall include, but not be limited to, the following:
 - 1. Competent persons (supervisor) job log;
 - 2. OSHA-compliant personnel air sampling data and exposure assessments;
 - 3. <u>Completed</u> waste shipment papers for non-hazardous lead construction and demolition (C&D) bulky waste disposal and scrap metal recycling
 - 4. Completed certified hazardous waste manifests for hazardous lead debris.

1.5 MEASUREMENT AND PAYMENT

The Contractor's cost proposal shall be based on the following criteria:

Measurement for payment shall be based on a lump sum price for the lead hazard control construction activities. Measurement of payment shall be based on a per ton price for transport and disposal of hazardous and non-hazardous lead waste.

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No extra payment shall be made for the construction and removal of containments, any required barrier installation and removal, decontamination, dust control, site preparation, site restoration or waste disposal areas. The cost for these items shall be included in the base bid.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with MSDS sheets as applicable.
- B. No damaged or deteriorating materials shall be used. If material becomes contaminated with lead, the material shall be decontaminated or disposed of as lead-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.
- C. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating six (6) mil thickness.
- D. Polyethylene disposable bags shall be six (6) mils thick.
- E. Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- F. Cleaning agents and detergent shall be lead specific, such as TriSodium Phosphate (TSP).
- G. Any chemical strippers and chemical neutralizers to be utilized shall be compatible with the substrate as well as with each other. Such chemical strippers shall contain less than 50% volatile organic compounds (VOCs) in accordance with RCSA 22a-174-40 Table 40-1.
- H. Labels and warning signs shall conform to OSHA 29 CFR 1926.62, USEPA 40 CFR 745, USEPA 40 CFR 260 through 274 and USDOT 49 CFR 172 as appropriate.
- I. Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.
- J. Air filtration devices and vacuum units shall be equipped with HEPA filters.

2.2 TOOLS AND EQUIPMENT

A. The Contractor shall provide tools and equipment that are suitable for lead paint related activity:

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- 1. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.
- 2. Electrical equipment, protective devices and power cables shall conform to all applicable codes.
- 3. Where lead exposures are above the OSHA Action Level or PEL, the Contractor shall provide wash facilities/shower stalls and plumbing that include sufficient hose length and drain system or an acceptable alternate. One shower stall shall be provided for each eight workers.
- 4. Where lead exposures are above the OSHA PEL, the Contractor shall provide exhaust air filtration units that are equipped with HEPA filters to provide local exhaust ventilation at the work area to reduce airborne lead emissions.
- 5. The Contractor shall provide vacuum units of suitable size and capabilities for the project which have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger. HEPA vacuums shall also be equipped with a beater bar.
- 6. The Contractor shall provide ladders and/or scaffolds 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.
- 7. Protective clothing, respirators, and HEPA P100 filter cartridges shall be provided in sufficient quantities for the project.
- 8. Equipment suitable for building renovation/demolition and proper waste/debris collection/packing/removal, (e.g. excavators, grapples, backhoes, roll-offs, etc.) shall be provided by the Contractor as required.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. All employees of the Contractor who perform work impacting lead paint shall be properly trained to perform such duties. In addition, the Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.
- B. Contractor shall provide all labor, materials, tools, equipment, services, testing, 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, industry standards and codes, and these Specifications.

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- C. Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site.
- D. As necessary, the Contractor shall:
 - 1. Shutdown and isolate heating, cooling, and ventilating air systems to prevent contamination and particulate dispersal to the other areas of the building.
 - 2. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the site.
 - 3. Coordinate all power and fire alarm isolation with the appropriate representatives.
 - 4. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.
- E. Ladders and/or scaffolds to be utilized throughout this project shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.
- F. Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.
- G. If adequate electrical supply is not available at the site, the Contractor shall supply temporary power. Such temporary power shall be sufficient to provide adequate lighting and power the Contractor's equipment. The Contractor is responsible for proper connection and installation of electrical wiring and shall ensure safe installation of electrical equipment in compliance with applicable electrical codes and OSHA requirements.
- H. If water service is not be available at the site for Contractor's use, the Contractor shall supply sufficient water for each shift to operate the wash facility/decontamination shower units in addition to the water needed at the work area.
- I. The Owner will provide a Project Monitor to monitor compliance of the Contractor. In such cases no activity impacting lead paint shall be performed until the Project Monitor is on-site. Environmental sampling, including ambient air sampling, TCLP waste stream sampling and/or dust wipe sampling, will be conducted by the Engineer/Project Monitor as deemed necessary throughout the project. Air monitoring to comply with the Contractor's obligations under OSHA remains solely the responsibility of the Contractor.

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- J. If air samples collected outside of the Regulated Area during activities impacting lead paint indicate airborne lead concentrations greater than original background levels or 30 ug/m³, whichever is larger, or if at any time visible emissions of lead paint extend out from the Regulated Area, an examination of the Regulated Area shall be conducted, and the cause of such emissions corrected. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming work.
- K. Work outside the initial designated area(s) will not be paid for by the Engineer. The Contractor will be responsible for all costs incurred from these activities including repair of any damage.

3.2 ESTABLISHMENT OF REGULATED WORK AREAS

- A. The Contractor shall establish a Regulated Area, through the use of appropriate barrier tape, or other means to control unauthorized access into the area when activities impacting lead paint are occurring.
- B. Warning signs meeting the requirements of OSHA 29 CFR 1926.62 shall be posted at all approaches to Regulated Areas. These signs shall read:

WARNING LEAD WORK AREA POISON NO SMOKING OR EATING

- C. The Contractor shall implement appropriate engineering controls such as critical barriers, poly drop cloths, negative pressure, local exhaust ventilation, wet dust suppression methods, etc. as necessary, and as approved by the Engineer, to prevent the spread of lead contamination beyond the Regulated Area in accordance with the Contractor's approved work plan. Should the previously submitted work plan prove to be insufficient to contain the contamination, the Contractor shall modify its plan and submit it for review by the Engineer.
- D. For exterior work areas, the Contractor shall use a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system to remove any visible existing paint chips from the ground to a distance of 20' out from the base of the exterior surface scheduled for lead paint activity prior to commencement of work and extend a 6 mil polyethylene sheet drop cloth on the ground adjacent to the exterior surface scheduled for lead paint activity to contain debris/contamination.

3.3 WASH FACILITIES

- A. The Contractor shall provide handwash facilities in compliance with 29 CFR 1926.51(f) and 29 CFR 1926.62 regardless of airborne lead exposure.
- B. If employee exposure to airborne lead exceeds the OSHA Permissible Exposure Limit (PEL) of 50 micrograms per cubic meter of air (μg/m³), shower rooms must be provided.

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The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water. Shower water shall be collected and filtered using best available technology and disposed of in accordance with all federal, state and local laws, regulations and ordinances.

3.4 PERSONNEL PROTECTION

- A. Exposure Assessments: The Contractor shall initially determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 micrograms per cubic meter (30 µg/m³). Assessments shall be based on initial air monitoring results as well as other relevant information. The Contractor may rely on historical air monitoring data obtained within the past 12 months under workplace conditions closely resembling the process, type of material, control methods, work practices and environmental conditions used and prevailing in the Contractors current operations to satisfy the exposure assessment requirements. Monitoring shall continue as specified in the OSHA standard until a negative exposure assessment is developed.
- B. Until a negative exposure assessment is developed for each task impacting lead paint, the Contractor shall ensure that all workers and authorized person entering the Regulated Area wear protective clothing and respirators in accordance with OSHA 29 CFR 1926.62. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings. Sufficient quantities shall be provided to last throughout the duration of the project.
- C. Protective clothing provided by the Contractor and used during chemical removal operations shall be impervious to caustic materials. Gloves provided by the Contractor and used during chemical removal shall be of neoprene composition with glove extenders.
- D. Respiratory protective equipment shall be provided, and selection shall conform to 42 CFR Part 84, 29 CFR Part 1910.134, and 29 CFR Part 1926.62. A formal respiratory protection program must be implemented in accordance with 29 CFR Part 1926.62 and 29 CFR Part 1910.134.

3.5 AIR MONITORING REQUIREMENTS

A. The Contractor shall:

- 1. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.
- 2. Conduct initial exposure monitoring to determine if any employee performing construction tasks impacting lead paint may be exposed to lead at or above the OSHA Action Level of 30 micrograms per cubic meter. Monitoring shall

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- continue as specified in the OSHA standard until a negative exposure assessment is developed.
- 3. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.62. 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.

3.6 LEAD PAINT ACTIVITY PROCEDURES

- A. The Contractor's Competent Person shall be at the job at all times during work impacting lead. The Competent Person shall also have prior experience with the removal of lead paint from historic wooden windows and structures in accordance with, and be knowledgeable of, the U.S. Department of the Interior, National Park Service, Cultural Resources, Historic Preservation Briefs 9, 10 & 37.
- B. Work impacting lead paint shall not begin until authorized by the Engineer, following a pre-abatement visual inspection by the Project Monitor.
- C. Any activity impacting lead painted surfaces shall be performed in a manner which minimizes the spread of lead dust contamination and generation of airborne lead.
- D. The Contractor shall ensure proper entry and exit procedures for workers and authorized persons who enter and leave the Regulated Area. All workers and authorized persons shall leave the Regulated Area and proceed directly to the wash or shower facilities where they 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 federal, state and local water discharge standards. Any permit required for such discharge shall be the responsibility of the Contractor.
- E. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in the Regulated Area.
- F. Utilize appropriate engineering controls and work practices (e.g. wet methods) as directed by 29 CFR 1926.62 (and 40 CFR 745.85 as applicable) to control lead emissions and contamination.
- G. Properly contain wastes containing lead paint for appropriate storage, transport and disposal.
- H. Stop all work in the regulated area and take steps to decontaminate non-work areas and eliminate causes of such contamination should lead contamination be discovered in areas outside of the regulated area.

I. Special Requirements:

1. Demolition/Renovation:

- a. Demolish/renovate in a manner which minimizes the spread of lead contamination and generation of lead dust.
- b. Implement dust suppression controls, such as misters, local exhausts ventilation, etc. to minimize the generation of airborne lead dust.
- c. Segregate work areas from non-work areas through the use or barrier tape, poly criticals, etc.
- d. Clean up immediately after renovation/demolition has been completed

2. Chemical Removal:

- a. Any chemical stripper must be approved by the Project Engineer prior to use.
- b. Apply chemical stripper in quantities and for durations specified by manufacturer.
- c. Where necessary scrape lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use sanding, hand scraping, and dental picks to supplement chemical methods as necessary.
- d. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
- e. Protect adjacent surfaces from damage from chemical removal.
- f. Maintain a portable eyewash station in the work area.
- g. Wear respirators that will protect workers from chemical vapors.
- h. Do not apply caustic agents to aluminum surfaces.

3. Paint Stabilization/Liquid Encapsulation:

a. Remove surface dust, dirt, mildew, scale, rust or other debris by scrubbing with detergent (lead-specific detergent solution) and rinsing. Remove loose paint using wet scraping methods until a sound surface is achieved. Remove unsound substrate not firmly adhered and repair with an appropriate patching material in accordance with the U.S. Department of the Interior, National Park Service Cultural Resources, Historic Preservation Briefs 9, 10 & 37, and the contract technical specifications.

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- b. Remove and reinstall or protect electrical receptacles, hardware, and wall mounted objects from being painted-over by encapsulant. Protect adjacent finishes from paint splatter or other damage.
- c. Apply encapsulant in a continuous coat. Number of coats is as specified in the manufacturer's instructions for application. Encapsulant shall be approved by the CTDPH for use. Use encapsulants only on substrates and locations approved for use in the manufacturer's instructions.

1. Mechanical Paint Removal:

- a. Mechanical paint removal methods are only to be utilized if removal cannot be completed using hand tools, and if approved by the Owner/Architect.
- b. Provide sanders, grinders, rotary wire brushes, or needle gun removers 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. Provide HEPA vacuums that are high performance designed to provide maximum static lift and maximum vacuum system flow at the actual operating vacuum condition with the shroud in use. The HEPA vacuum shall be equipped with a pivoting vacuum head.
- d. Remove lead paint from surface down to required level of removal (i.e. stabilized surface, bare substrate with no trace of residual pigment, etc.). Use chemical methods, hand scraping, and dental picks to supplement abrasive removal methods as necessary.
- e. Protect adjacent surfaces from damage from abrasive removal techniques.
- f. "Sandblasting" type removal techniques should only be performed within full containment negative pressure enclosures, and not without prior approval by the Project Engineer.

5. Component Removal/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 components by approved methods which will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.

c. Clean up immediately after component removals have been completed. Remove any dust located behind the component removed.

3.7 PROHIBITED REMOVAL METHODS

- A. The use of heat guns in excess of 700 degrees Fahrenheit to remove lead paint is prohibited.
- B. The use of sand, steel grit, water, air, CO₂, baking soda, or any other blasting media to remove lead or lead paint without the use of a HEPA ventilated contained negative pressure enclosure is prohibited.
- C. Power tool assisted grinding, sanding, cutting, needle gun, power planning or wire brushing of lead paint without the use of cowled HEPA vacuum dust collection systems is prohibited.
- D. Lead paint burning, busting of rivets painted with lead paint, welding of materials painted with lead paint, and torch cutting of materials painted with lead paint is prohibited. Where cutting, welding, busting, or torch cutting of materials is required, pre-remove the lead paint in the area affected.
- E. Use of chemical strippers containing Methylene Chloride is prohibited.
- F. Compressed air shall not be utilized to remove lead paint.
- G. Power/Pressure washing shall not be used to remove paint.

3.8 CLEAN-UP AND VISUAL INSPECTION/VERIFICATION

- A. The Contractor shall remove and containerize all lead waste material and visible accumulations of debris, paint chips and associated items.
- B. During clean up the Contractor shall utilize rags and sponges wetted with lead-specific detergent and water as well as HEPA filtered vacuum equipment.
- C. The Engineer/Project Monitor will conduct a visual inspection of the work areas in order to document that all surfaces have been maintained as free as practicable of accumulations of lead in accordance with OSHA 29 CFR 1926.62(h). If visible accumulations of waste, debris, lead paint chips or dust are found in the work area, 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. Dust wipe clearance testing, in accordance with CTDPH/USEPA/HUD protocols, will also be performed by the Engineer <u>if so detailed in Section 1.2 Description of Work.</u> If lead dust wipe levels are above CTDPH/EPA/HUD clearance criteria, the Contractor shall re-clean the work area and retesting shall be conducted at the Contractors expense.

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The testing and cleaning sequence shall be repeated until the clearance criteria levels have been achieved.

3.9 POST ABATEMENT WORK AREA DEREGULATION

- A. Following the visual inspection, (and clearance/verification testing if appropriate/specified), any engineering controls and warning signs implemented may be removed.
- B. A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain. If this final visual is acceptable, the Contractor shall reopen the Regulated Area and remove all signage.
- C. The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer/Owner.

3.10 NON-HAZARDOUS WASTE DISPOSAL/RECYCLING

- A. Non-metallic building debris waste materials tested and found to be non-hazardous Construction and Demolition (C&D) bulky waste shall be disposed of properly at a CTDEEP approved Solid Waste landfill.
- B. Metallic debris shall be segregated and recycled as scrap metal at an approved metal recycling facility. The Contractor shall submit to the Engineer all documentation necessary to demonstrate the selected recycling facility is able to accept lead-painted scrap metal.
- C. Concrete, brick, stone, cured asphalt, etc. coated with <u>any amount of lead paint</u> cannot be crushed, recycled or buried on-site to minimize waste disposal unless representatively tested and found to meet the CTDEEP RSR GA/Residential Standards. Only CTDEEP defined "clean fill" can be recycled on-site or sent to a recycling facility.

3.11 HAZARDOUS LEAD WASTE DISPOSAL

- A. If required to dispose of any hazardous waste, the Contractor shall utilize a certified/permitted transporter for hazardous waste in compliance with DOT 49 CFR Part 172 and USEPA 40 CFR 260-274 and a permitted hazardous waste treatment storage disposal facility (TSDF) in compliance with USEPA 40 CFR 260-274.
- B. Hazardous lead bearing material must be offered for transportation and transported in compliance with the Code of Federal Regulations, Title 49, Chapter 1, Part 173, Subparts A, B, C, and D and Paragraph 178.118. Transport vehicles (hopper or dump type) must be free from leaks and discharge openings must be securely closed during transportation. All storage containers (roll offs or drums) shall have a protective liner and removable lid.

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- These containers shall not have any indentations or damage that would allow seepage of the contained material.
- C. The disposal of hazardous lead bearing material must be in compliance with the requirements of, and authorized by, the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, and the USEPA.
- D. The disposal of hazardous lead bearing waste shall comply with the requirements of the Resource Conservation and Recovery Act (RCRA).
- E. Unless previous waste characterizations have been completed by the Engineer, all generated waste shall be containerized and stored on-site for hazardous waste determination via TCLP testing. TCLP testing and analysis shall be the responsibility of the Engineer.
- F. The dumpsters/containers containing hazardous waste are to be kept closed and covered and locked when not in active use for the loading of materials.
- G. All containers of hazardous lead bearing material shall be labeled in accordance with 29 CFR 1926.62 and EPA 40 CFR 260-270.
- H. All hazardous lead-bearing waste removed from the site by the Contractor shall be containerized in lined roll-offs or barrels. Store waste materials in U.S. Department of Transportation (49 CFR 178) approved containers. Properly label and placard each container to identify the type of waste (49 CFR 172) and the date the container was filled. The disposal containers shall be labeled with a six inch square, yellow, weatherproof, hazardous waste sticker in accordance with U.S. DOT regulations, by the Contractor.
- I. The Contractor may not store containerized hazardous lead waste on the job site for in excess of 90 calendar days from the accumulation start date.
- J. When required to dispose of hazardous waste, the Contractor shall utilize a certified/permitted transporter for hazardous waste in compliance with USDOT 49 CFR Part 172 and USEPA 40 CFR 260-274 and a permitted hazardous waste treatment storage disposal facility (TSDF) in compliance with USEPA 40 CFR 260-274.
- K. The Contractor shall complete a Uniform Hazardous Waste Manifest, EPA Form 8700-22, and submit to the Engineer for review and generator sign-off prior to each load of hazardous waste scheduled to leave the site. Completed copies of the manifest shall be delivered by the Contractor to the Engineer within 30 calendar days following the date the load leaves the site.
- L. When all necessary procedures have been completed, then the hazardous waste shall be shipped to the hazardous waste disposal facility.
- M. Any spillage of debris during disposal operation, i.e., loading, transport and unloading, shall be cleaned up in accordance with the Code of Federal Regulations, Title 40, Chapter 1, Part 265, Subparts C and D, at the Contractor's expense.

SECTION 028313 – LEAD PAINT ACTIVITY STATE OF CONNECTICUT MILITARY DEPARTMENT NEW LONDON ARMORY

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- N. The Contractor is liable for any fines, costs or remediation costs incurred as a result of the failure to be in compliance with this special provision and all federal, state and local laws.
- O. Final payment requisitions for the contract will not be processed until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Engineer.

END OF SECTION 02 83 13

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	TRC-	<u>Le</u>	ad Based Pa	<u>aint Measur</u>	<u>ement Su</u>	<u>ımmary</u>	<u>Table</u>					
Device(s):	Niton XLP301-A (Serial	#24792) X	Ray Fluorescen	ce (XRF) Spectri	ım Analyzer							
Site:	New London Armory, N	New Londo	n, Connecticut									
Project #:	326372-0000-0000											
Date(s):	1/22/2019											
Inspector:	Zachary Smith											
Number	Room	Side	Structure	Feature	Material	Color					Duration	Date/Time
									(mg/cm2)	Index	(sec)	
1	Shutter calibration							2.2	0.0		141.87	1/21/2019 14:10
2	Shutter calibration							2.2	0.0		140.36	1/22/2019 10:54
3	0.0 calibration							0.0	0.0	1	2.02	1/22/2019 10:56
4	0.7 calibration							0.7	0.1	1.09	3.51	1/22/2019 10:56
5	1.6 calibration	_						1.6	0.1	1.19	5.69	1/22/2019 10:57
6	Boiler Room		Wall		Block	White	Intact	0.0	0.0	3.28	3.52	1/22/2019 12:04
7	Boiler Room		Wall		Block	White	Intact	0.0	0.0	1.47		1/22/2019 12:04
8	Boiler Room		Wall		Block	Grey	Intact	0.0	0.0	1	1	1/22/2019 12:04
9	Boiler Room		Wall		Block	Grey	Intact	0.0	0.0	2.64	4.03	1/22/2019 12:05
10	Boiler Room		Wall		Block	Red	Intact	0.0	0.0	1.31	4.19	1/22/2019 12:05
11	Boiler Room		Electrical conduit		Metal	Red	Intact	0.2	0.5	10	1.34	1/22/2019 12:06
12	Boiler Room		Electrical conduit		Metal	White	Intact	0.0	0.1	1	0.17	1/22/2019 12:06
13	Boiler Room		Electrical conduit		Metal	White	Intact	0.1	0.1	3.11	3.01	1/22/2019 12:07
14	Boiler Room		Electrical conduit		Metal	White	Intact	0.1	0.1	6.87	8.17	1/22/2019 12:07
15	Boiler Room		Window	Sill	Metal	Green	Intact	0.1	0.0	1.24	6.87	1/22/2019 12:09
16	Boiler Room		Electrical conduit		Metal	Grey	Intact	0.1	0.0	1.45	6.68	1/22/2019 12:10
17	Boiler Room		Electrical conduit		Metal	Grey	Intact	0.1	0.1	2.6	5.2	1/22/2019 12:11
18	Boiler Room		Pipe rise		Metal	Grey	Intact	0.3	0.6	10	2.17	1/22/2019 12:12
19	Boiler Room		Pipe rise		Metal	Grey	Intact	0.1	0.2	9.89	4.19	1/22/2019 12:12
20	Boiler Room		Pipe rise		Metal	Grey	Intact	0.2	0.3	10	4.19	1/22/2019 12:13
21	Boiler Room		Pipe rise		Metal	Grey	Intact	0.0	0.0	1	2.18	1/22/2019 12:13
22	Boiler Room		Boiler		Metal	Blue	Intact	0.0	0.0	1	1.34	1/22/2019 12:14
23	Utility Room		Electrical conduit		Metal	Green	Defective	0.2	0.1	5.83	6.54	1/22/2019 12:19
24	Utility Room	Α	Electrical box		Metal	Grey	Intact	0.2	0.1	5.89	8.16	1/22/2019 12:20
25	0.0 calibration							0.0	0.0	1	2.02	1/22/2019 13:20
26	0.7 calibration							0.8	0.1	1.2	7.36	1/22/2019 13:20
27	1.6 calibration							1.5	0.2	1.16	4.19	1/22/2019 13:21

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		<u>L(</u>	ead Based P	<u>aint Measi</u>	<u>urement</u>	Summai	<u>ry Lable</u>	T		1		
Device(s):	Niton XLP301-A (Seria	al #25555) X Ray Fluoresc	ence (XRF) Sp	ectrum Ana	lyzer						
Site:	New London Armory,	Bayonet	Road, New Lond	on, Connectic	ut							
Project #:	277434-0000-0000											
Date(s):	4/18/2017											
Inspector:	Gregory Kaczynski (L	ead Insp	ector #002158)									
Number	Room	Side	Structure	Feature	Material	Color	Condition	Reading	Precision	Depth	Duration	Date/Time
									(mg/cm2)	Index	(sec)	
1	Shutter calibration							1.9	0.0		156.08	4/18/2017 8:57
2	0.3 calibration							0.3	0.1	1.02	4.55	4/18/2017 10:16
3	1.6 calibration							1.5		1.14	5.08	4/18/2017 10:17
4	3.5 calibration							3.6	0.2	1.32	7.98	4/18/2017 10:17
5	Room 36	D	Wall		Concrete	Tan/Beige	Intact	0.0	0.0	1.43	3.81	4/18/2017 10:26
6	Room 35	С	Window	Sill	Concrete	Tan/Beige	Intact	0.1	0.4	8.54	21.55	4/18/2017 10:29
7	Room 35	С	Window	Sill	Concrete	Tan/Beige	Intact	0.1	0.1	4.36	3.98	4/18/2017 10:30
8	0.3 calibration							0.3	0.0	1.18	11.04	4/18/2017 11:11
9	1.6 calibration							1.5	0.1	1.13	5.46	4/18/2017 11:12
10	3.5 calibration							3.4	0.3	1.24	4.53	4/18/2017 11:13
11	Room 4	Α	Window	Sill	Metal	Tan/Beige	Intact	0.1	0.1	7.64	10.36	4/18/2017 11:16
12	Room 4	Α	Wall		Concrete	Tan/Beige	Intact	0.0	0.0	1	4.18	4/18/2017 11:17
13	Room 1	Α	Wall		Concrete	Tan/Beige	Intact	0.0	0.0	2.47	4.89	4/18/2017 11:19
14	Room 1	Α	Window	Sill	Metal	Tan/Beige	Intact	0.0	0.4	10		4/18/2017 11:21
15	Room 1	Α	Window	Sill	Metal	Tan/Beige	Intact	0.0	0.0	2.43	2.18	4/18/2017 11:21
16	Room 1	Α	Window	Sill	Metal	Tan/Beige	Intact	-0.1	0.7	10	6.71	4/18/2017 11:22
17	Room 17	В	Window	Sill	Metal	Tan/Beige	Intact	0.1	0.4	10	16.98	4/18/2017 11:25
18	Room 17	В	Wall		Concrete	Tan/Beige	Intact	0.0	0.0	2.86	5.98	4/18/2017 11:25
19	Room 20	В	Wall		Ceramic	Tan/Beige	Intact	0.0	0.0	1.48	3.83	4/18/2017 11:27
20	Room 20	В	Window	Casing	Metal	Tan/Beige	Intact	0.0	0.0	1.16	3.98	4/18/2017 11:28
21	Room 25	В	Window	Casing	Metal	Tan/Beige	Intact	0.0	0.0	1.03	3.63	4/18/2017 11:30
22	Room 25		Window	Sill	Metal		Intact	0.3				
23	Room 25	В	Wall		Concrete	Tan/Beige	Intact	0.0				4/18/2017 11:31
24	Room 28	С	Window	Cover	Metal		Intact	0.0				4/18/2017 11:33
25	Room 28	С	Wall		Concrete	Tan/Beige	Intact	0.0				4/18/2017 11:34
26	Room 7	Α	Wall		Concrete	Tan/Beige	Intact	0.0			3.64	4/18/2017 11:36
27	Room 7		Window	Sill	Metal	Tan/Beige	Intact	0.1	0.7	8.22		4/18/2017 11:37
28			Window	Lentil	Metal	Orange	Intact	6.8				4/18/2017 11:39
29		D	Window	Lentil	Metal	Orange	Intact	19.3		1.79		4/18/2017 11:40
30		С	Window	Lentil	Metal	Orange	Intact	16.2	6.1	1.74	1.63	4/18/2017 11:41

	TRC-	Le	ead Based Pa	aint Measu	irement	Summa	ry Table					
Device(s):	Niton XLP301-A (Serial a	[‡] 25555) X Ray Fluoresce	nce (XRF) Spe	ctrum Ana	lyzer						
Site:	New London Armory, Ba	ayonet	Road, New Londo	n, Connecticu	ıt							
Project #:	277434-0000-0000											
Date(s):	4/18/2017											
Inspector:	Gregory Kaczynski (Lea	d Insp	ector #002158)									
	_			_								
Number	Room	Side	Structure	Feature	Material	Color	Condition				Duration	Date/Time
								(mg/cm2)	(mg/cm2)	Index	(sec)	
31		С	Window	Lentil	Metal	Orange	Intact	11.3	4.4	1.61	2.18	4/18/2017 11:43
32	0.3 calibration							0.3	0.1	1.14	7.26	4/18/2017 12:03
33	1.6 calibration							1.5	0.1	1.09	7.26	4/18/2017 12:03
34	0.7 calibration							0.7	0.1	1.14	7.25	4/18/2017 12:04

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	RC	Lea	ad Based I	Paint Meas	<u>suremer</u>	nt Sumn	nary lab	<u>ie</u>				
Daviss(s):	Niton VI D204 A (Corio	1 #2555	E) V Dov Eluc	rocconos (VDE) Coootrus	Analyzar						
Device(s): Site:	Niton XLP301-A (Seria) Spectrun	Analyzer						
Project # :	New London Armory, 164560-5430-0001	New LC	Tidon, Connec	licui								
•	9/4/2012											
Date(s):	Thomas Martin (Lead	Inonoot	#002070\									
Inspector:	THOMAS WAITH (Leau	inspeci	101 #002079)									
Number	Room	Side	Structure	Feature	Material	Color	Condition	Reading	Precision	Depth	Duration	Date/Time
- Italiiboi	i toom	0.00	Otraotaro	1 outuro	matorial	00.0.	Condition		(mg/cm2)	Index	(sec)	<u> </u>
1	Shutter calibration							2.3	0.0		150.89	9/4/2012 9:54
2	0.0 calibration							0.0	0.0	1	1.82	9/4/2012 9:57
3	0.3 calibration							0.4	0.1	1.18		9/4/2012 9:57
4	1.6 calibration							1.5	0.1	1.13		9/4/2012 9:58
5	Kitchen	Α	Wall		Block	Tan/Beige	intact	0.8	0.2	3.49		9/4/2012 9:59
6	Kitchen	С	Wall		Block		intact	0.8	0.2	4.05		9/4/2012 10:00
7	Kitchen	A	Door	Casing	Metal		intact	0.1	0.1	4.59		9/4/2012 10:01
8	Kitchen	Α	Door	Jamb	Metal	Brown	intact	0.0	0.0	5.1	22.25	9/4/2012 10:03
9	Kitchen	T	Ceiling		Plaster	White	intact	0.0	0.0	2.97	7.5	9/4/2012 10:09
10	Hallway		I beam		Metal	Red	intact	11.9	1.9	1.5		9/4/2012 10:17
11	Boiler Room	С	Wall		Block	White	intact	0.0	0.0	1.85		9/4/2012 10:29
12	Boiler Room	Α	Wall	upper	Block	White	intact	0.0	0.0	1.96		9/4/2012 10:30
13	Boiler Room	Α	Wall	lower	Block	Grey	intact	0.0	0.0	1	4.05	9/4/2012 10:31
14	Boiler Room		Floor		Concrete	Red	intact	0.0	0.0	2.29		9/4/2012 10:32
15	Boiler Room	Α	Wall	lower	Block	Red	intact	0.0	0.0	1	3.83	9/4/2012 10:33
16	Boiler Room	С	railing		Metal	Yellow	intact	2.5	0.6	1.94	2.62	9/4/2012 10:35
17	Boiler Room	С	Door		Metal	Red	defective	0.3	0.1	1.61	3.65	9/4/2012 10:37
18	Boiler Room	С	Door	Casing	Metal	Red	defective	0.3	0.1	1.59	3.63	9/4/2012 10:38
19	Boiler Room		Ceiling		Plaster	Grey	defective	0.0	0.0	1.19	4.63	9/4/2012 10:41
20	Utility Room	Α	Wall		Brick	White	intact	0.0	0.0	2.43		9/4/2012 10:43
21	Utility Room	В	Wall		Block	White	intact	0.0	0.0	3.77	3.64	9/4/2012 10:45
22	Utility Room	С	Door	Casing	Metal	White	intact	0.1	0.1	4.34	3.22	9/4/2012 10:46
23	Utility Room	С	Door		Metal	Grey	intact	0.0	0.0			9/4/2012 10:48
24	Storage Room 1	С	Wall		Block	White	intact	0.0	0.1	5.76		9/4/2012 12:03
25	Storage Room 1	Α	Wall		Block	White	intact	0.0	0.0			9/4/2012 12:03
26	Storage Room 1	D	Wall		Block	White	intact	0.0	0.0	1.96		9/4/2012 12:04
27	Storage Room 1	С	Wall		Wood	White	intact	0.0		4.52		9/4/2012 12:04
28	Storage Room 1	С	Wall		Sheetrock		intact	0.0				9/4/2012 12:06
29	Storage Room 1	В	Door	Jamb	Wood	White	intact	0.0	0.0	1.72	2.62	9/4/2012 12:06

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		•				1.0		•				
	RC-	Lea	ad Based I	Paint Meas	uremer	nt Summ	nary lab	<u>le</u>				
	1											
	Niton XLP301-A (Seria) Spectrun	n Analyzer						
	New London Armory, I	New Lo	ndon, Conne	cticut								
	164560-5430-0001											
· · · /	9/4/2012											
Inspector:	Thomas Martin (Lead I	nspect	tor #002079)									
	_										_	
Number	Room	Side	Structure	Feature	Material	Color	Condition	Reading	Precision	Depth	Duration	Date/Time
		_				1			(mg/cm2)	Index	(sec)	2442242424
	Storage Room 2	D	Wall		Block		intact	0.0	0.1	5.93	3.42	9/4/2012 12:15
	Storage Room 2	D	Wall		Brick	White	intact	0.0	0.0	1	4.22	9/4/2012 12:15
	Storage Room 2	Α	Wall		Block	White	intact	0.0	0.0	1.01	4.05	9/4/2012 12:16
	Storage Room 2	D	Window	sill	Metal	White	intact	0.1	0.1	1.7	1.82	9/4/2012 12:17
	Storage Room 3	С	Wall	lower	Brick		intact	0.0	0.0	1	4.45	9/4/2012 12:20
	Storage Room 3	С	Wall	upper	Brick		intact	0.0	0.0	1	4.89	9/4/2012 12:20
	Storage Room 3	Α	Wall	upper	Block		intact	0.0	0.0	2.03	3.63	9/4/2012 12:21
	Storage Room 3		cage		Metal	Black	intact	0.0	0.0	1	1.61	9/4/2012 12:22
	Storage Room 3	В	Door	Casing	Metal	Yellow	intact	0.0	0.0	3.7	3.62	9/4/2012 12:23
	Storage Room 4	A	Wall		Block	White	intact	0.0	0.0	1	4.05	9/4/2012 12:27
	Storage Room 4	С	Wall		Block	White	intact	0.0	0.0	2.38	4.64	9/4/2012 12:27
	Storage Room 4	A	Wall		Wood	White	intact	0.0	0.0	1	2.63	9/4/2012 12:28
	Storage Room 4	С	Door	Casing	Metal	White	defective	0.0	0.5	2.78	10.52	9/4/2012 12:29
	Storage Room 4	С	Door	Casing	Metal	White	defective	0.1	0.0	4.07	20.41	9/4/2012 12:30
	Room 38	В	Wall		Brick	Green	intact	0.0	0.0	1.04	3.44	9/4/2012 12:37
	Room 38 Room 38	В	Door	Inverse	Metal Brick	,	intact	0.1 0.0	0.1 0.0	1.19 3.61	2.23 3.63	9/4/2012 12:38 9/4/2012 12:38
	Room 38	С	Wall Wall	lower	Brick		intact intact	0.0	0.0	3.01	4.24	9/4/2012 12:39
	0.0 calibration	C	vvali	upper	DITCK	Green	IIIIaci	0.0	0.0	1.69	2.23	9/4/2012 12:41
	0.3 calibration							0.0	0.0	1.09	3.03	9/4/2012 12:41
	1.6 calibration							1.5	0.1	1.11	5.26	9/4/2012 12:41
	Shutter calibration							2.1	0.1	1.11	150.95	9/6/2012 12:42
	0.0 calibration							0.0	0.0	1	1.81	9/6/2012 8:23
	0.3 calibration							0.0	0.0	1.11	3.02	9/6/2012 8:23
	1.6 calibration							1.5	0.1	1.08	4.83	9/6/2012 8:24
	Hall 1	Α	Wall		Block	Tan/Beige	intact	0.0	0.1	2.76		9/6/2012 8:32
	Hall 1	C	Wall		Block	Tan/Beige		0.0	0.0	1.13		9/6/2012 8:33
	Hall 1	C	Wall		Block	Tan/Beige		0.0		4.67	3.83	9/6/2012 8:34
	Hall 1	В	Wall		Block	Tan/Beige		0.0		6.33		9/6/2012 8:34

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	RC-	Lea	ad Based	Paint Meas	<u>suremer</u>	<u>nt Sumn</u>	nary Tab	<u>ole</u>				
	1											
Device(s):	Niton XLP301-A (Serial	#2555	5) X Ray Fluo	rescence (XRI	F) Spectrun	n Analyzer						
Site:	New London Armory, N			•	ĺ .							
Project #:	164560-5430-0001											
Date(s):	9/4/2012											
Inspector:	Thomas Martin (Lead I	nspect	tor #002079)									
Number	Room	Side	Structure	Feature	Material	Color	Condition		Precision	Depth	Duration	Date/Time
									(mg/cm2)	Index	(sec)	
59	Hall 1	В	Door	Casing	Metal	Brown	intact	0.0		1	2.01	9/6/2012 8:35
60	Hall 1	В	Door		Metal	Brown	defective	0.0	0.0	1	2.01	9/6/2012 8:35
61	Hall 1		I beam		Metal	Red	intact	10.1	14.2	1.54	0.2	9/6/2012 9:02
62	Hall 1		I beam		Metal	Red	intact	16.4	4.2	1.57	2.22	9/6/2012 9:03
63	Conference Room		I beam		Metal	Red	intact	11.6	3.2	1.42	2.61	9/6/2012 9:07
64	Conference Room	Α	Wall		Block	Tan/Beige		0.0		1	3.03	9/6/2012 9:08
65	Conference Room	С	Wall		Block	Tan/Beige	-	0.0	0.0	1.76		9/6/2012 9:09
66	Conference Room	D	Door	Casing	Metal	Tan/Beige		0.0	0.1	2		9/6/2012 9:09
67	Shower	В	Wall		Block	Tan/Beige		0.0	0.1	7.07	4.02	9/6/2012 9:42
68	Shower	D	Wall	upper	Block	Tan/Beige		0.0	0.0	3.72	3.62	9/6/2012 9:42
69	Shower	D	Door	Casing	Metal	Tan/Beige		0.0	0.0	1	2.23	9/6/2012 9:43
70	Shower		Ceiling		Plaster	White	intact	0.0	0.0	1.06	3.84	9/6/2012 9:47
71	Fitness Room	Α	Wall		Wood	Tan/Beige		0.0	0.0	1	2.42	9/6/2012 9:57
72	Fitness Room	Α	Wall		Block	Tan/Beige		0.0	0.0	1	3.83	9/6/2012 9:57
73	Fitness Room	Α	Door	Casing	Metal	Tan/Beige	1	0.0	0.0	1	3.61	9/6/2012 9:59
74	Womens Locker Room	В	Wall		Wood	Tan/Beige		0.0	0.0	1	2.01	9/6/2012 10:18
75		D	Wall		Sheetrock			0.0	0.0	1	3.23	9/6/2012 10:18
76		Α	Door	Casing	Metal	Tan/Beige	1	0.0	0.0	1	1.2	9/6/2012 10:19
77	Womens Locker Room	С	Wall		Block	White	intact	0.0	0.0	3		9/6/2012 10:21
78		D	Wall		Block	White	intact	0.0	0.0	1 72	3.63	9/6/2012 10:21
79 80	Locker Room Unit 4 Locker Room Unit 4	A C	Wall Wall		Block	Tan/Beige		0.0	0.0	1.73 1	5.23 4.04	9/6/2012 10:40 9/6/2012 10:41
		C			Block	Tan/Beige						
81 82	Locker Room Unit 4	Δ	rf drain pipe Wall		Metal	Tan/Beige		0.6 0.0		5.02 6.32		9/6/2012 10:41 9/6/2012 10:57
83	Locker Room 021 Locker Room 021	A B	Wall		Block Sheetrock	Tan/Beige Tan/Beige		0.0		0.32	2.21	9/6/2012 10:57
84	Locker Room 021	D	Wall		Block	Tan/Beige Tan/Beige		0.0		1	5.23	9/6/2012 10:58
85	Locker Room 021	С	Door	Casing	Metal	Tan/Beige Tan/Beige		0.0		1.72		9/6/2012 10:59
86	Toilets 031	D	Wall	Casing		Tan/Beige		0.0		3.64		9/6/2012 10:39
87	Toilets 031	A	Wall		Block	Tan/Beige		0.0				9/6/2012 11:35
01	1011612 001	Λ	vvali		DIOCK	Tan/beige	IIIIau	0.0	0.0	1.04	5.22	3/0/2012 11.33

	RC-	Lea	ad Based I	Paint Meas	<u>suremer</u>	<u>ıt Sumn</u>	nary Tab	<u>le</u>				
Device(s):	Niton XLP301-A (Serial	#2555	55) X Ray Fluo	rescence (XRF	Spectrum	n Analyzer						
Site:	New London Armory, N			•	ĺ							
Project #:	164560-5430-0001											
Date(s):	9/4/2012											
Inspector:	Thomas Martin (Lead I	nspect	tor #002079)									
Number	Room	Side	Structure	Feature	Material	Color	Condition		Precision	Depth	Duration	Date/Time
									(mg/cm2)	Index	(sec)	
88	Toilets 031	Α	Door	Casing	Metal	Tan/Beige	1	0.0	0.0	1	2.01	9/6/2012 11:36
89	Toilets 031	Α	radiator cover		Metal	Tan/Beige		0.0	0.0	1.02	2.82	9/6/2012 11:37
90	Locker Room 022	С	Wall		Block	Tan/Beige		0.0	0.1	5.53	3.83	9/6/2012 11:48
91	Locker Room 022	В	Wall		Sheetrock	Tan/Beige		0.0	0.0	1	2.03	9/6/2012 11:48
92	Locker Room 022	Α	Door	Jamb	Metal			0.1	0.1	3.12	3.03	9/6/2012 11:49
93	Janitor 30A		Floor		Concrete	Red	defective	0.0	0.0	1.19		9/6/2012 11:50
94	Janitor 30A	D	Wall		Block		-	0.0	0.0	1.25	3.42	9/6/2012 11:51
95	Janitor 30A	D	Door	Jamb	Metal	Tan/Beige		0.0	0.1	1.87	2.83	9/6/2012 11:52
96	Conference Room 029	С	Wall		Block	Tan/Beige		0.0	0.1	3.16		9/6/2012 12:21
97	Conference Room 029	Α	Wall		Wood	Tan/Beige		0.0	0.0	1	1.82	9/6/2012 12:22
98	Conference Room 029	В	Door	Casing	Metal	Tan/Beige		0.0	0.0	2.81	3.63	9/6/2012 12:23
99	Shower 024	Α	Door	Casing	Metal	Tan/Beige		0.0	0.0	1.16	2.62	9/6/2012 12:24
100	Shower 024	Α	Wall	upper	Block	Tan/Beige		0.0	0.0	1.34	3.63	9/6/2012 12:25
101	Shower 024	D	Wall	upper	Sheetrock	Tan/Beige		0.0	0.0	1	2.23	9/6/2012 12:25
102	Admin 028	С	Wall	upper	Block	Tan/Beige		0.0	0.0	1.37	3.83	9/6/2012 12:28
103	Admin 028	D	Wall	upper	Block	Tan/Beige		0.0	0.0	1	3.42	9/6/2012 12:30
104	Admin 028	С	Window	sill	Metal	Tan/Beige		0.1	0.1	3.9		9/6/2012 12:31
105	Storage 025	С	Door	Casing	Metal	Tan/Beige	1	0.0	0.0	1.62	2.63	9/6/2012 12:32
106	Personnel	В	Door	Casing	Metal	Tan/Beige		0.0	0.1	2.46		9/6/2012 12:33
107	Personnel Hall	С	Wall		Block	Tan/Beige	intact	0.0	0.0	1	3.83	9/6/2012 12:33
108	0.0 calibration							0.0	0.0	1	2.22	9/6/2012 12:42
109	0.3 calibration							0.4	0.1	1.13		9/6/2012 12:42
110	1.6 calibration					- /F ·		1.5		1.09		9/6/2012 12:42
111	Room 1	С	Wall		Block	Tan/Beige		0.0	0.0	1.47	3.02	9/6/2012 14:48
112	Room 1	Α	Wall		Block	Tan/Beige		0.0	0.0	3.31	3.62	9/6/2012 14:49
113	Room 1	С	Window	sill	Metal	Tan/Beige		0.0	0.0	1.52		9/6/2012 14:50
114	Room 1	Α	Door	Casing	Metal	Tan/Beige		0.0	0.0	1.65		9/6/2012 14:51
115	Room 2	Α	Wall			Tan/Beige		0.0	0.0	1	3.43	9/6/2012 15:01
116	Room 2	В	Wall		Block	Tan/Beige	∣ıntact	0.0	0.0	2.19	3.83	9/6/2012 15:02

	RC-	Lea	ad Based	Paint Meas	<u>suremer</u>	<u>ıt Sumn</u>	nary Tab	<u>le</u>				
Device(s):	Niton XLP301-A (Seria	I #2555	55) X Ray Fluo	rescence (XRI	Spectrun	n Analyzer						
Site:	New London Armory,	New Lo	ondon, Conne	cticut	ĺ							
Project #:	164560-5430-0001		,									
Date(s):	9/4/2012											
Inspector:	Thomas Martin (Lead	Inspec	tor #002079)									
Number	Room	Side	Structure	Feature	Material	Color	Condition		Precision	Depth	Duration	Date/Time
									(mg/cm2)	Index	(sec)	
117	Room 2	С	Door	Casing	Metal	Tan/Beige		0.1	0.1	4.91	4.43	9/6/2012 15:03
118	Room 2	D	Door	Jamb	Metal	Tan/Beige		0.0	0.0	1.26	2.22	9/6/2012 15:03
119	Room 4	D	Wall		Block	Tan/Beige		0.0	0.0	2.2	4.23	9/6/2012 15:17
120	Room 4	В	Wall		Block	Tan/Beige		0.0	0.0	3.37	5.63	9/6/2012 15:18
121	Room 4	D	Door	Casing	Metal	Tan/Beige		0.0	0.1	2.65		9/6/2012 15:19
122	Room 1A	С	Door	Casing	Metal	Tan/Beige		0.1	0.1	7.13		9/6/2012 15:24
123	Room 1A	В	Wall		Block	Tan/Beige		0.0	0.0	1	2.23	9/6/2012 15:25
124	Room 1A	С	Wall		Block	Tan/Beige	intact	0.0	0.0	1	4.23	9/6/2012 15:25
125	0.0 calibration				 			0.1	0.1	3.47	7.45	9/6/2012 15:27
126	0.0 calibration				 			0.0	0.0	1	2.61	9/6/2012 15:28
127	0.3 calibration			 	 			0.3	0.1	1.05	3.23	9/6/2012 15:28
128	1.6 calibration				 			1.4	0.1	1.08	7.27	9/6/2012 15:28
129	Shutter calibration							2.3	0.0	4	150.93	9/7/2012 8:14
130	0.0 calibration							0.0	0.0	1 10	2.61	9/7/2012 8:16
131	0.3 calibration							0.3	0.1	1.13	3.22	9/7/2012 8:17
132	1.6 calibration	D	Wall		Chastrask	Tan/Daine	into at	1.5	0.1	1.13 4.91	5.62	9/7/2012 8:18
133 134	Room 3	B C	Wall					0.0	0.1 0.0	4.91	2.81	9/7/2012 8:30 9/7/2012 8:30
135	Room 3 Room 3	В	Wall		Block			0.0	0.0	1.08	3.03	9/7/2012 8:31
136	Office unit 3	С	Wall				intact	0.0	0.0	1.08	2.21	9/7/2012 9:00
137	Office unit 3	В	Wall		Sheetrock		intact	0.0	0.0	1	2.21	9/7/2012 9:01
138	Office unit 3	В	Door	Jamb	Metal	Brown	intact	0.0	0.0	3.29		9/7/2012 9:02
139	Office unit 3	В	Wall		Block	Tan/Beige		0.0		2.63		9/7/2012 9:17
140	Office unit 2	С	Wall		Block			0.0	0.0	2.03	4.44	9/7/2012 9:18
141	Office unit 2	C	Door	Casing	Metal	Brown	intact	0.0	0.0	4.68		9/7/2012 9:18
142	Office unit 1	C	Door	Casing	Metal	Brown	intact	0.1	0.4	3.06		9/7/2012 9:34
143	Office unit 1	C	Door	Casing	Metal		intact	0.0	0.0	2.96		9/7/2012 9:35
144	Office unit 1	В	Wall		Block	Tan/Beige		0.0	0.0	1.22		9/7/2012 9:36
145	Office unit 1	D	Wall		Block	Tan/Beige		0.0			3.83	9/7/2012 9:36
	1		1 - 7	1	1			0.0	0.0	•	0.00	5, . , _ 0 1 _ 0.00

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	RC	Lea	<u>ad Based F</u>	<u>Paint Meas</u>	uremen	<u>ıt Sumn</u>	nary Tab	<u>le</u>				
	1											
Device(s):	Niton XLP301-A (Serial	#2555	55) X Rav Fluor	escence (XRF) Spectrum	Analyzer						
Site:	New London Armory, N			•	, -,	,						
Project #:	164560-5430-0001		,									
Date(s):	9/4/2012											
Inspector:	Thomas Martin (Lead II	nspect	or #002079)									
•		•	,									
Number	Room	Side	Structure	Feature	Material	Color	Condition	Reading	Precision	Depth	Duration	Date/Time
								(mg/cm2)	(mg/cm2)	Index	(sec)	
146	Battalion HQ 9	В	Wall		Block	Tan/Beige	intact	(mg/cm2) 0.0	(mg/cm2) 0.0	Index 1	(sec) 3.83	9/7/2012 9:53
146 147	Battalion HQ 9 Battalion HQ 9	B C	Wall Wall	 	Block Block	Tan/Beige Tan/Beige				1.92		9/7/2012 9:53 9/7/2012 9:54
	· ·		Wall	 Casing			intact	0.0	0.0	1	3.83	
147	Battalion HQ 9	С	Wall	 Casing	Block	Tan/Beige	intact intact	0.0	0.0	1 1.92	3.83 4.03	9/7/2012 9:54
147 148	Battalion HQ 9 Battalion HQ 9	C B	Wall Door	 Casing 	Block Metal	Tan/Beige Tan/Beige	intact intact intact	0.0 0.0 0.0	0.0 0.0 0.0	1 1.92 1.25	3.83 4.03 2.41	9/7/2012 9:54 9/7/2012 9:54
147 148 149	Battalion HQ 9 Battalion HQ 9 Battalion HQ 9A Battalion HQ 9A Battalion HQ 9A	C B D	Wall Door Wall		Block Metal Block	Tan/Beige Tan/Beige Tan/Beige	intact intact intact	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	1 1.92 1.25 1.69	3.83 4.03 2.41 4.43	9/7/2012 9:54 9/7/2012 9:54 9/7/2012 10:06
147 148 149 150	Battalion HQ 9 Battalion HQ 9 Battalion HQ 9A Battalion HQ 9A	C B D	Wall Door Wall Wall Door		Block Metal Block Block	Tan/Beige Tan/Beige Tan/Beige Tan/Beige	intact intact intact intact intact	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	1.92 1.25 1.69 1.15	3.83 4.03 2.41 4.43 4.04	9/7/2012 9:54 9/7/2012 9:54 9/7/2012 10:06 9/7/2012 10:07
147 148 149 150 151	Battalion HQ 9 Battalion HQ 9 Battalion HQ 9A Battalion HQ 9A Battalion HQ 9A	C B D B	Wall Door Wall Wall Door	 Casing Casing	Block Metal Block Block Metal	Tan/Beige Tan/Beige Tan/Beige Tan/Beige Brown	intact intact intact intact intact intact	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	1 1.92 1.25 1.69 1.15 5.84	3.83 4.03 2.41 4.43 4.04 2.82	9/7/2012 9:54 9/7/2012 9:54 9/7/2012 10:06 9/7/2012 10:07 9/7/2012 10:08
147 148 149 150 151 152	Battalion HQ 9 Battalion HQ 9 Battalion HQ 9A Battalion HQ 9A Battalion HQ 9A Exterior Storage Room	C B D B	Wall Door Wall Wall Door Door	 Casing Casing	Block Metal Block Block Metal Metal	Tan/Beige Tan/Beige Tan/Beige Tan/Beige Brown Tan/Beige	intact intact intact intact intact intact	0.0 0.0 0.0 0.0 0.0 0.1 20.2	0.0 0.0 0.0 0.0 0.0 0.1 5.7	1 1.92 1.25 1.69 1.15 5.84	3.83 4.03 2.41 4.43 4.04 2.82 1.62 1.62 1.61	9/7/2012 9:54 9/7/2012 9:54 9/7/2012 10:06 9/7/2012 10:07 9/7/2012 10:08 9/7/2012 10:27 9/7/2012 10:28 9/7/2012 10:30
147 148 149 150 151 152 153	Battalion HQ 9 Battalion HQ 9 Battalion HQ 9A Battalion HQ 9A Battalion HQ 9A Exterior Storage Room Exterior Storage Room	C B D B	Wall Door Wall Wall Door Door	 Casing Casing	Block Metal Block Block Metal Metal Metal	Tan/Beige Tan/Beige Tan/Beige Tan/Beige Brown Tan/Beige	intact intact intact intact intact intact	0.0 0.0 0.0 0.0 0.0 0.1 20.2	0.0 0.0 0.0 0.0 0.0 0.1 5.7 0.0	1 1.92 1.25 1.69 1.15 5.84	3.83 4.03 2.41 4.43 4.04 2.82 1.62 1.62	9/7/2012 9:54 9/7/2012 9:54 9/7/2012 10:06 9/7/2012 10:07 9/7/2012 10:08 9/7/2012 10:27 9/7/2012 10:28