APPENDIX

BUILDING PRE-DEMOLITION SURVEY

EFI Global
Complex Issues • Solid Solutions

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March 24, 2011

Mr. John Figurelli PG, LEP
Project Manager
Weston & Sampson Engineers, Inc.
273 Dividend Road
Rocky Hill, CT 06067

Re: Pre-Demolition Hazardous Materials Survey
11 Hope Street, East Lyme, CT
EFI Project No.: 98350-02683

Dear Mr. Figurelli:

On March 15, 2011, EFI Global, Inc. (EFI) performed pre-demolition sampling for asbestos-containing materials, polychlorinated biphenyls (PCBs), and lead paint at the property located at 11 Hope Street in East Lyme, Connecticut. These services were performed in response to the proposed demolition of the building.

Asbestos Survey

The asbestos sampling was performed by Connecticut-licensed asbestos inspector Mr. Craig Miner of EFI on March 15, 2011. A total of 35 samples of suspect asbestos-containing materials were collected. EFI performed the bulk sampling in the area according to methods outlined in the U.S. Environmental Protection Agency (EPA) guidance document titled, "Guidance for Controlling Asbestos-Containing Materials in Buildings" (Document No. 560/5-85/024). The results of the sampling are summarized in the following table:

Table I
Asbestos Bulk Sample Results

Sample ID	Type of Material	Sample Location	Analytical Result
01A-B	2'X4' Ceiling Tiles	1st Floor	No Asbestos Detected
02A-B	Green Patterned Linoleum	2nd Floor – Kitchen	20% Chrysotile Asbestos
03A-B	Ceramic Floor Tile Grout	2nd Floor – Bathroom	No Asbestos Detected
04A-B	Electrical Wire Insulation	1st &2nd Floors	No Asbestos Detected
05A	Furnace Insulation	1st Floor	70% Chrysotile Asbestos
06A-B	Light Fixture Paper	2nd Floor Bedroom	70% Chrysotile Asbestos
07A-B	Chimney Flashing	Roof	20% Chrysotile Asbestos
08A-B	1st Layer Roof Shingle	Roof	No Asbestos Detected
09A-B	2nd Layer Roof Shingle	Roof	No Asbestos Detected
10A-B	Caulk at window lintel and on chimney	Rear porch and chimney	No Asbestos Detected
11A-B	Window Caulk, metal to metal	Exterior	No Asbestos Detected

Sample ID	Type of Material	Sample Location	Analytical Result
12A-B	Window Caulk, metal to brick	Exterior	No Asbestos Detected
13A-B	Fake Brick Siding	Exterior – above gable windows	No Asbestos Detected
14A-C	Joint Compound	2nd Floor	2% Chrysotile Asbestos
15A-B	Door Caulk	Exterior	No Asbestos Detected
16A-B	Window Glazing	1st Floor - Old Windows	No Asbestos Detected
17A-B	Sheetrock	2nd Floor	No Asbestos Detected
18A	Chimney Flue Cement	1st Floor	70% Chrysotile Asbestos

The U.S. Environmental Protection Agency (EPA) defines an Asbestos-Containing Material (ACM) as a material that contains greater than 1 percent (%) asbestos. Asbestos was detected in twelve of the building materials sampled by EFI in concentrations greater than 1%. Based upon the laboratory analysis, the following materials were found to be asbestos-containing building materials (ACM):

Asbestos-Containing Building Materials (ACM):

- **The green patterned linoleum located in the second floor kitchen was found to contain 20% Chrysotile asbestos.**
- **The furnace insulation located in the first floor was found to contain 70% Chrysotile asbestos.**
- **The light fixture paper located in the second floor bedroom was found to contain 70% Chrysotile asbestos.**
- **The chimney flashing located on the exterior of the building was found to contain 20% Chrysotile asbestos.**
- **The joint compound and associated sheetrock located in the second floor was found to contain 2% Chrysotile asbestos.**

The EPA - NESHAP regulations (National Emissions Standard for Hazardous Air Pollutants - 40 CFR Part 61, Subpart M), require that friable ACM, Category I and II non-friable ACM that has become friable, or Category I and II non-friable ACM that will be or has been subject to sanding, grinding, or abrading, be removed from a facility being demolished or renovated prior to any activity that would disturb the material.

The following table lists the quantities and locations of ACM identified within the survey area:

Table II
Quantities of Asbestos-Containing Materials

Asbestos-Containing Material	Location	Approximate Quantity
Green Patterned Linoleum	2nd Floor – Kitchen	250 SF
Furnace Insulation	1st Floor	1 Furnace ~3'x 3'x 3'
Light Fixture Paper	2nd Floor Bedroom	1 Fixture ~1SF
Chimney Flashing	Roof	5 SF

Asbestos-Containing Material	Location	Approximate Quantity
Joint Compound and Associated Sheetrock	2nd Floor	1,000 SF
Chimney Flue Cement	1st Floor	2 SF

*LF= Linear Feet SF= Square Feet

Asbestos Limitations

EFI's survey did not include an evaluation of underground asbestos cement water/sewer piping, underground steam lines, and subsurface foundation damp-proofing that may be present at the Site. Limited exploratory demolition was performed to access potentially hidden materials in pipe/other building chases or fire door cores. In addition to the above listed materials, other suspect ACMs may be present at the site. EFI investigated above ceilings and within pipe chases for potential asbestos-containing pipe insulation but did not observe any, however the materials may be concealed by existing ceilings and/or walls.

EFI recommends that if any suspect materials are uncovered during demolition or renovation activities that were not identified during the survey, that the materials be sampled and analyzed for asbestos content prior to removal.

Lead Paint Screening

On March 15, 2011 EFI performed a lead paint screening of representative surfaces in select areas of the property located at 11 Hope Street in East Lyme, Connecticut. EFI provided random sampling of painted components and subsequent analysis via Atomic Absorption Spectrometry using method SW846-7420. Samples were analyzed by EMSL Analytical of Westmont, New Jersey.

Summary of Findings

The paint screening revealed that two of the paint chip samples collected from the property located at 11 Hope Street in East Lyme, Connecticut, contained levels of lead paint that are greater than the EPA residential standard of 0.50% lead by weight. The results of the samples ranged from <0.011% to 5.8% weight percent lead. The Occupational Health and Safety Administration (OSHA) Lead in Construction Standard 29 CFR 1926.62, however, considers any detectable level of lead to be a potential for exposure if dust is generated from these surfaces. Please refer to the below listed OSHA regulation for further information.

Table III
Lead Paint Sample Results

Sample ID	Sample Description	Analytical Results (% lead by weight)
L1	White Paint on Sheetrock – 2nd Floor	0.021
L2	Green Paint on Wood Cabinets – 2nd Floor	0.085
L3	White Paint on Exterior Wood Door Trim	3.4
L4	White Paint on Exterior Wood Window Trim	5.8
L5	Interior Pinkish Walls – 1st Floor	<0.011

Regulatory Implications and Regulations

Worker Protection

OSHA defines any detectable concentration of lead paint as a potential lead exposure hazard to workers doing construction/demolition-type work on these surfaces as even small concentrations of lead can result in unacceptable employee exposures depending upon the method of removal and other workplace conditions. Since these conditions can vary greatly, the lead-in-construction standard was written to require exposure monitoring or the use of historical or objective data to ensure that employee exposures do not exceed the Action Level of 30 micrograms per cubic meter of air (µg/m3). Historical data may be applied to all construction tasks involving lead.

OSHA requires that if lead paint coated surfaces are impacted during demolition, then lead exposure monitoring must be performed by the contractor. Contractors and employers of staff who may disturb these materials are obligated to perform a 'negative exposure assessment' in accordance with OSHA regulations in order to document that, although minimal levels of lead are present in these materials, exposure to lead does not exceed the aforementioned OSHA Action Level.

OSHA states that until the employer performs an exposure assessment (or can supply prior data regarding the same type of work which may exempt them from the standard) and documents that employees are not exposed above the permissible exposure limit (PEL) of greater than 50 µg/m3 of air, the employer must treat employees as if they were exposed above the PEL for the following operations:

- manual demolition of structures, manual scraping, manual sanding, and use of heat gun where lead-containing coatings or paints are present;
- abrasive blasting enclosure movement and removal;
- power tool cleaning;
- lead burning;
- using lead-containing mortar or spray painting with lead-containing paint;
- abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;
- cleanup activities where dry expendable abrasive are used; and
- any other task the employer believes may cause exposure in excess of the PEL.

The contractor must provide respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until an exposure assessment has determined that the work activity will result in an exposure below the PEL. Additional requirements under this standard include a written compliance program as well as record keeping.

Polychlorinated Biphenyls (PCB) Sampling

PCB's are regulated under EPA's Toxic Substances Control Act (TSCA) Public Law 94-469 40 and promulgated in 40 CFR Part 761. PCB-containing bulk materials that contain greater than 50 ppm of PCB's are considered to be PCB-containing materials and must be disposed of as a PCB-containing material at a TSCA regulated facility, while bulk materials with concentrations of PCB's less than 50 ppm are not regulated by TSCA and can be disposed of at a facility permitted to accept less than 50 ppm PCB-containing materials.

Based on the above referenced limits, none of the materials sampled by EFI at the site will be required to be disposed of at a TSCA regulated facility. EFI conducted an inspection of the property located at 11 Hope Street in East Lyme, Connecticut for materials that may contain PCBs. Various types and colors of caulking were identified within the property. Four (4) samples were collected for PCB analysis. These samples were analyzed by Alpha Analytical of Westborough, MA by EPA Method 8082.

Table IV
Polychlorinated Biphenyls (PCB) Sample Results

Sample ID	Sample Description	Analytical Results (ppm)
1	Window Caulk – metal to brick	Not detected
2	Window Glazing – old windows first floor	2.36 ppm – Aroclor 1260
3	Caulk at window lintel and on chimney	Not detected
4	Window Caulk – metal to metal	1.09 ppm – Aroclor 1260

Various colors and types of caulking were identified during our inspection of the property. Sampling was conducted of the caulking materials and laboratory analysis identified that two of the caulk samples contained very low levels of PCBs. No samples were found to contain PCBs at a level >50 ppm which would require special handling and disposal to comply with the EPA and DEP regulations.

It should be recognized that if historic use of PCB-containing materials occurred at the site and those materials have been subsequently removed, there is the possibility of PCB's leaching into the materials/substrates to which the PCB-containing materials were formerly applied. This may not be identified in surveys if newer non-PCB-containing materials are present and sampled.

Universal Waste Inventory

The primary concern regarding the disposal of used light ballasts is the health risk associated with exposure to PCBs. Fluorescent light ballasts contain a small capacitor that may contain high concentrations of PCBs (greater than 90% pure PCBs or 900,000 parts per million (ppm)). These chemical compounds were widely used as insulators in electrical equipment such as capacitors, switches, and voltage regulators through the late 1970s. Fluorescent light ballasts manufactured prior to 1979 may contain small quantities of PCBs. Recently manufactured fluorescent light ballasts are required to have "No PCB" labels. Light ballasts that do not have "No PCB" labels should be treated as PCB-containing and handled/disposed of accordingly. In addition, if light ballasts do not have "No PCB" labels, the manufacturer should be contacted to ascertain the presence of PCBs. Following the ban of PCB production, in 1979 manufacturers

began using di (2-ethylhexyl) phthalate (DEHP) as a replacement to PCBs. DEHP is listed as a hazardous substance under the EPA's Superfund regulations. Generators discarding of light ballasts should take the same precautions with their DEHP ballasts as they do with their PCB ballasts to avoid any future liabilities.

The primary concern regarding the disposal of fluorescent light bulbs is the health risk associated with exposure to mercury. Fluorescent light bulbs contain a small quantity of mercury that can be harmful to the environment and to human health when improperly managed. Mercury is regulated under RCRA, which is administered by the US Environmental Protection Agency. To prevent these toxic materials from contaminating the environment, EFI recommends that fluorescent light bulbs and mercury-containing thermostats be disposed/recycled of in accordance with applicable regulations.

EFI estimated that a total of approximately 15 ballasts are present at the site. It is recommended that *all* ballasts be removed from the site and disposed in accordance with applicable federal, state, and local regulations. EFI also identified a total of approximately 35 4-foot and 2 2-foot fluorescent light bulbs at the site. EFI recommends recycling of fluorescent light bulbs and mercury-containing thermostats in accordance with applicable state and federal regulations.

Other Hazardous Materials

As part of the survey, EFI performed a survey/inventory of hazardous chemicals and mechanical equipment located within the survey area that will require special handling and disposal prior to building renovation / demolition activities. The following hazardous materials were observed within the building:

Table V
Hazardous Materials Inventory

Material Description	Material Location	Potential Hazard	Estimated Quantity	
Microwave	2nd Floor - Kitchen	Electrical Components	1	Unit
Computer Monitor	2nd Floor - Kitchen	Cathode Ray Tube	1	Unit
One gallon paint container	2nd Floor - Bathroom	Chemical	2	Units
One gallon Muriatic Acid (HCl) container	2nd Floor - Bathroom	Chemical	3	Units
One quart paint container	2nd Floor - Bathroom	Chemical	2	Units

During the inspection EFI also observed various household cleaners, refrigerators and freezer units belonging to the food pantry occupying the first floor of the building. It is assumed that those materials are the property of the food pantry organization and as such would be removed prior to the demolition of the building. Otherwise, they should be disposed of properly in conjunction with the other items listed in Table V.

Also, a 275 gallon Above-Ground Storage Tank (AST) was noted at the rear exterior of the building. The tank appeared to be disconnected and drained but EFI did not perform any further investigation regarding the AST.

Recommendations

Due to the presence of asbestos-containing materials, lead paint and other hazardous materials at the site EFI makes the following recommendations:

1. Asbestos: The generation of an asbestos abatement and hazardous materials removal specification to identify acceptable means and methods of performing asbestos abatement under EPA and Connecticut regulations.
2. Lead Paint: Lead containing paint is found of the exterior window and door trim of the building. The handling and disposal of this material must be performed in accordance with the health and safety measures outlined in the OSHA Lead in Construction Standard. Proper worker protection, paint removal procedures prior to cutting must be employed in the removal of this material during demolition. Contractors should be informed lead containing paints exist on the premises.
3. Other Hazardous Materials and Universal Waste: While these items are not typically of a large cost for handling and disposal, proper disposal of them is required. EFI recommends recycling of fluorescent light bulbs and mercury-containing thermostats in accordance with applicable state and federal regulations.

Limitations

This report has been prepared to assist the client in evaluating the presence of asbestos, lead paint, universal waste and PCBs at the above referenced site. EFI provided these services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of the client.

This report is not intended to serve as a bidding document nor as a project specification document and actual site conditions and quantities should be field verified. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user. Although a reasonable attempt has been made to identify environmental issues in the areas inspected, the inspection was limited by the techniques used and areas inspected.

Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during the inspection of the site.

We appreciate the opportunity to assist Weston & Sampson Engineers, Inc. with this project. If you have any questions or require any additional information, please do not hesitate to contact us at (978) 688-3736.

Sincerely,
EFI Global, Inc.

Craig Miner, LEED AP
Senior Project Manager

Keith Pokorny, LEED AP
Senior District Manager

Attachments: Analytical Laboratory Results

Mr. John Figurelli
Weston & Sampson Engineers, Inc.

273 Dividend Rd., Rocky Hill, CT
98350-02683

BUILDING PRE-DEMOLITION SURVEY

EMSL Analytical, Inc.
7 Constitution Way, Suite 107, Woburn, MA 01801
Phone: (781) 933-8411 Fax: (781) 933-8412 Email: bostonlab@emsl.com

Attn: **Craig Miner**
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Project: **98350-02683 / 11 Hope St; East Lyme, CT**

Customer ID: EAFI66
Customer PO:
Received: 03/16/11 9:00 AM
EMSL Order: 131100955

EMSL Proj:
Analysis Date: 3/18/2011

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos			Asbestos
Sample	Description	Appearance	%	Fibrous	% Non-Fibrous	% Type
01A *131100955-0001*	1st Fl - 2x4 Ceiling Tile	Gray Fibrous Homogeneous	40% 40%	Cellulose Min. Wool	20% Non-fibrous (other)	None Detected
01B *131100955-0002*	1st Fl - 2x4 Ceiling Tile	Gray Fibrous Homogeneous	40% 40%	Cellulose Min. Wool	20% Non-fibrous (other)	None Detected
02A *131100955-0003*	Kitchen; 2nd Fl - Green Patterned Linoleum	Tan Fibrous Heterogeneous			80% Non-fibrous (other)	20% Chrysotile
02B *131100955-0004*	Kitchen; 2nd Fl - Green Patterned Linoleum					Stop Positive (Not Analyzed)
03A *131100955-0005*	2nd Fl Bathroom - Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
03B *131100955-0006*	2nd Fl Bathroom - Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
04A *131100955-0007*	2nd & 1st Flrs - Electrical Wire Insulation	Gray Fibrous Homogeneous	95%	Glass	5% Non-fibrous (other)	None Detected

Initial report from 03/18/2011 09:23:51

Analyst(s)
Kevin Pine (31)

Renaldo Drakes, Laboratory Manager
or other approved signatory

BUILDING PRE-DEMOLITION SURVEY

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos			Asbestos
Sample	Description	Appearance	%	Fibrous	% Non-Fibrous	% Type
04B *131100955-0008*	2nd & 1st Firs - Electrical Wire Insulation	Gray Fibrous Homogeneous	95%	Glass	5% Non-fibrous (other)	None Detected
05A *131100955-0009*	1st Fl - Furnace Insulation	Gray Fibrous Homogeneous			30% Non-fibrous (other)	70% Chrysotile
06A *131100955-0010*	2nd Fl - Light Fixture Paper	White Fibrous Homogeneous			30% Non-fibrous (other)	70% Chrysotile
06B *131100955-0011*	2nd Fl - Light Fixture Paper					Stop Positive (Not Analyzed)
07A *131100955-0012*	Roof - Chimney Flashing	Black Non-Fibrous Homogeneous			80% Non-fibrous (other)	20% Chrysotile
07B *131100955-0013*	Roof - Chimney Flashing					Stop Positive (Not Analyzed)
08A *131100955-0014*	Roof - 1st Layer Roof Shingle	Black Fibrous Heterogeneous	20%	Glass	80% Non-fibrous (other)	None Detected

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			Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous		% Non-Fibrous	% Type
08B *131100955-0016*	Roof - 1st Layer Roof Shingle	Black Fibrous Heterogeneous	20%	Glass	80% Non-fibrous (other)	None Detected
09A *131100955-0016*	Roof - 2nd Layer Roof Shingle	Black Fibrous Heterogeneous	30%	Cellulose	70% Non-fibrous (other)	None Detected
09B *131100955-0017*	Roof - 2nd Layer Roof Shingle	Black Fibrous Heterogeneous	30%	Cellulose	70% Non-fibrous (other)	None Detected
10A *131100955-0018*	Rear Porch/Chimney - Caulk at Window on Chimney	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
10B *131100955-0019*	Rear Porch/Chimney - Caulk at Window on Chimney	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
11A *131100955-0020*	Exterior - Window Caulk Metal to Metal	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
11B *131100955-0021*	Exterior - Window Caulk Metal to Metal	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected

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Renaldo Drakes, Laboratory Manager
or other approved signatory

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			Non-Asbestos			Asbestos
Sample	Description	Appearance	%	Fibrous	% Non-Fibrous	% Type
12A *131100955-0022*	Exterior - Window Caulk Metal to Brick	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
12b *131100955-0023*	Exterior - Window Caulk Metal to Brick	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
13A *131100955-0024*	Above Gable Windows; Exterior - Fake Brick Siding	Red/Black Fibrous Heterogeneous	30%	Cellulose	70% Non-fibrous (other)	None Detected
13B *131100955-0025*	Above Gable Windows; Exterior - Fake Brick Siding	Red/Black Fibrous Heterogeneous	30%	Cellulose	70% Non-fibrous (other)	None Detected
14A *131100955-0026*	2nd Fl - Joint Compound	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
14B *131100955-0027*	2nd Fl - Joint Compound	Tan Non-Fibrous Homogeneous			98% Non-fibrous (other)	2% Chrysotile
14C *131100955-0028*	2nd Fl - Joint Compound					Stop Positive (Not Analyzed)

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Kevin Pine (31)

Reinaldo Drakes, Laboratory Manager
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none dete require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express v approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Ir and use of test results are the responsibility of the client.Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0315, MA AA000188, RI AAL-107T3 and VT AL357102

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			Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous		% Non-Fibrous	% Type
15A *131100955-0029*	Exterior - Door Caulk	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
15B *131100955-0030*	Exterior - Door Caulk	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
16A *131100955-0031*	Old Windows; 1st Fl - Window Glazing	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
16B *131100955-0032*	Old Windows; 1st Fl - Window Glazing	White Non-Fibrous Homogeneous			100% Non-fibrous (other)	None Detected
17A *131100955-0033*	2nd Fl - Sheetrock	Tan/White Fibrous Heterogeneous	10%	Cellulose	90% Non-fibrous (other)	None Detected
17B *131100955-0034*	2nd Fl - Sheetrock	Tan/White Fibrous Heterogeneous	10%	Cellulose	90% Non-fibrous (other)	None Detected
18A *131100955-0035*	1st Fl - Chimney Flue Cement	Gray Fibrous Homogeneous			30% Non-fibrous (other)	70% Chrysotile

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Renaldo Drakes, Laboratory Manager
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Samples analyzed by EMSL Analytical, Inc. Woburn, MA NVLAP Lab Code 101147-0, CT PH-0316, MA AA000188, RI AAL-107T3 and VT AL357102

THIS IS THE LAST PAGE OF THE REPORT.

BUILDING PRE-DEMOLITION SURVEY

EFI Global
Complex Issues • Solid Solutions

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Tel: 800-659-1202
Fax: 978-688-5494
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BULK SAMPLE CHAIN OF CUSTODY FORM

Your Name:	C. Miner	Bill to:	Same
Company:	EFI	Address:	
Address:	Ten New England Business Center,		
	Suite 105	City/State:	Zip:
City/State:	Andover, Massachusetts Zip: 01810	PO #:	

Project Information

Project #/Name: 11 Hope St, East Lyme, CT 98350-02683
Results To: Craig_miner@efiglobal.com Tel: (978) 688-3736
Alternate: Lynda_mcdermott@efiglobal.com Fax: (978) 688-5954

Requested Turnaround Time

RUSH ☐ | 1 Day ☐ | 2 Day ☒ | 3 Day ☐ | 5 Day ☐

Stop at first positive Y ☒ or N ☐

Media and Methodology

PLM - BULK ○ EPA 600/R-93/116 ○ Point Count ○ Gravimetric

	SAMPLE ID	HA #	TYPE OF MATERIAL	LOCATION	QUANTITY
-2	01A-B		2'X4' Ceiling Tiles	1st Floor	
3-4	02A-B		Green Patterned linoleum	Kitchen - 2nd Floor	12x18
5-6	03A-B		Ceramic Floor Tile Grout	2nd Flr. - Bathroom	155F
7-8	04A-B		Electrical Wire Insulation	2nd & 1st Flrs.	
9	05A-B		Furnace Insulation	1st Flr.	3x3x3
10-11	06A-B		Light fixture paper	2nd Flr.	1
12-13	07A-B		Chimney flashing	Roof	
14-15	08A-B		1st layer roof shingle	↓	
16-17	09A-B		2nd layer roof shingle	↓	
18-19	10A-B		Caulk at window lintel on chimney	Rear porch / chimney	

Total Number of Samples Submitted: 35

Signatures

Relinquished By:		Date: 3-15-11	Time: 1600
Received By:	RECEIVED MAR 16 2011	Date:	Time:
Relinquished By:	BY: SA 0900	Date:	Time:
Received By:		Date:	Time:

BUILDING PRE-DEMOLITION SURVEY

EFI Global
Complex Issues • Solid Solutions

131100955

Ten New England Business Center
Suite 105
Andover, MA 01810
Tel: 978-688-3736
Tel: 800-659-1202
Fax: 978-688-5494
www.efiglobal.com

Project Name/Number _____ Page _____ of _____

	SAMPLE ID	HA #	TYPE OF MATERIAL	LOCATION	QUANTITY
-21	11A-B		Window Caulk Metal to Metal	Exterior	8-3'x5'
-23	12A-B		Window Caulk Metal to Brick		
-25	13A-B		Fake brick siding	Above Gable windows-Exterior	405F
-28	14A-B		Joint compound	2nd Flr.	24x30
-30	15A-B		Door Caulk	Exterior	
-32	16A-B		Window Glazing	Old windows 1st Flr.	
-34	17A-B		Sheetrock	2nd Flr.	
35	18A		Chimney Flue Cement	1st Flr.	15F

RECEIVED
MAR 16 2011
BY: SA 0900

BUILDING PRE-DEMOLITION SURVEY

EMSL Analytical, Inc.
3 Cooper St., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-9551 Email: westmontleadlab@emsl.com

Attn: **Craig Miner**
EFI Global, Inc.
187 Ballardvale Street
Suite A215
Wilmington, MA 01887

Fax: (978) 688-5494 Phone: (978) 688-3738
Project: **98350-02683 ; 11 Hope St. East Lyme, CT**

Customer ID: EAFI66
Customer PO:
Received: 03/17/11 10:09 AM
EMSL Order: 201103198

EMSL Proj:

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B*/7000B)

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
L1	*0001*		3/19/2011	0.021 % wt
	Site: White Paint on Sheetrock- 2FL			
L2	*0002*		3/19/2011	0.085 % wt
	Site: Green Paint on Wood Cabinets-2FL			
L3	*0003*		3/19/2011	3.4 % wt
	Site: White Paint Ext Door Trim			
L4	*0004*		3/19/2011	5.8 % wt
	Site: White Paint Ext Window Trim			
L5	*0005*		3/19/2011	<0.011 % wt
	Site: Int. Pinkish Walls- 1FL			

Initial report from 03/21/2011 15:39:54

Julie Smith - Laboratory Director
NJ-NELAP Accredited:04653
or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with these sample results included in this report meet the method quality control requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities.

* slight modifications to methods applied Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted

Samples analyzed by EMSL Analytical, Inc. Westmont, NJ NELAP Certifications: NJ 04653, NY 10898, PA 68-00387, AIHA-LAP, LLC ELLAP 100194, A2LA 2845.01

ProScience Analytical Services, Inc.

Chemistry Chain of Custody Record

2103198

LABORATORY/HEADQUARTERS
22 Cummings Park, Woburn, MA 01801
T:781-935-3212 F:781-932-4857

LABORATORY SERVICES
683 North Mountain Rd., Newington, CT 06111
T:860-953-1022 F: 860-953-1030

☐ Rush/<6 Hours — Turn Around Time Requested (circle)

Same Day | Next Day | 2 Day ☒ | 3 Day ☐ | 5 Days ☐

Client: EFI Global

Address: Street

Town | State/Zip

Project Site Line 1: 11 Hoose St

Line 2: East Lyme, CT

Project Number: 98350-02683

Purchase Order

Contact: C. Miner

Phone

FAX

Alt/Pager

☐ NELAC analysis

TYPE OF ANALYSIS (circle)

DUST WIPES	PAINT (0.1 g)	SOIL (1 g)
AIR	TSP	TCLP (100g)
(min)	PM10	Other

Please use a separate form for each matrix.

Element: gravimetric

(Pb) Cd Cr As

Se Ag Ba Hg

Other (please specify under Comments)

For Laboratory Use

BATCH NUMBER: C

☐ QC

☐ ASTM E1792

FOR LABORATORY USE ONLY

	Date and Time Sampled	Field I.D.	Sample Description/Location	Air Sampling Information: Start Time	End Time	Start Flowrate	End Flowrate	Volume (liters)	Wiped area: length (inch)	width (inch)	Area (sq in)	ANALYSIS: Weight (grams)	Dil'n	AA Reading	RESULT	Lab I.D.
1		L1	White Paint on Sheetrock - 2nd Flr.													
2		L2	Green Paint on Wood Cabinets - 2nd Flr.													
3		L3	White Paint Exterior Door Trim													
4		L4	White Paint Exterior Window Trim													
5		L5	Int. Pinkish walls 1st Flr													

BUILDING PRE-DEMOLITION SURVEY

Relinquished By: [signature] Date: 3-16-11 Time: 0900

Received By: [signature] Date: 3/17/11 RECEIVED 1009 Time:

MAR 18 2011

BY: SL 0900

Comments:

ver 5.1

ANALYTICAL REPORT

Lab Number:	L1103471
Client:	E.F.I. 187 Ballardvale Street Suite A215 Wilmington, MA 01887
ATTN:	Craig Miner
Phone:	(978) 688-3736
Project Name:	WSE
Project Number:	98350-02683
Report Date:	03/24/11

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

BUILDING PRE-DEMOLITION SURVEY

Project Name: WSE
Project Number: 98350-02683

Lab Number: L1103471
Report Date: 03/24/11

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1103471-01	1	11 HOPE ST., EAST LYME, CT	03/15/11 11:12
L1103471-02	2	11 HOPE ST., EAST LYME, CT	03/15/11 11:21
L1103471-03	3	11 HOPE ST., EAST LYME, CT	03/15/11 11:33
L1103471-04	4	11 HOPE ST., EAST LYME, CT	03/15/11 11:39

BUILDING PRE-DEMOLITION SURVEY

Project Name: WSE
Project Number: 98350-02683

Lab Number: L1103471
Report Date: 03/24/11

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

Report Submission

This report replaces the report issued March 22, 2011. The PCB extraction method has been changed.

PCBs

L1103471-01 through -04 have elevated detection limits due to the limited sample volumes utilized during extraction, as required by the sample matrix.

L1103471-02: The internal standard (IS) response for 1-Bromo-2-Nitrobenzene was above the acceptance criteria on the confirmation column; however, the sample was not re-analyzed due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Due to this internal standard failure, the surrogate recoveries are below the individual acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene (13%) and Decachlorobiphenyl (11%), and the dual column RPD is above the acceptance criteria for Aroclor 1260.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative

Date: 03/24/11

ORGANICS

PCBS

Project Name:	WSE	**Lab Number:**	L1103471
Project Number:	98350-02683	**Report Date:**	03/24/11

SAMPLE RESULTS

Lab ID:	L1103471-01	Date Collected:	03/15/11 11:12
Client ID:	1	Date Received:	03/16/11
Sample Location:	11 HOPE ST., EAST LYME, CT	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	1,8082	Extraction Date:	03/21/11 17:00
Analytical Date:	03/22/11 12:09	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	03/22/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	03/22/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	294	--	1
Aroclor 1221	ND		ug/kg	294	--	1
Aroclor 1232	ND		ug/kg	294	--	1
Aroclor 1242	ND		ug/kg	294	--	1
Aroclor 1248	ND		ug/kg	196	--	1
Aroclor 1254	ND		ug/kg	294	--	1
Aroclor 1260	ND		ug/kg	196	--	1
Aroclor 1262	ND		ug/kg	98.0	--	1
Aroclor 1268	ND		ug/kg	98.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	66		30-150
2,4,5,6-Tetrachloro-m-xylene	65		30-150
Decachlorobiphenyl	77		30-150

Project Name:	WSE	**Lab Number:**	L1103471
Project Number:	98350-02683	**Report Date:**	03/24/11

SAMPLE RESULTS

Lab ID:	L1103471-02	Date Collected:	03/15/11 11:21
Client ID:	2	Date Received:	03/16/11
Sample Location:	11 HOPE ST., EAST LYME, CT	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	1,8082	Extraction Date:	03/21/11 17:00
Analytical Date:	03/22/11 12:22	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	03/22/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	03/22/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	216	--	1
Aroclor 1221	ND		ug/kg	216	--	1
Aroclor 1232	ND		ug/kg	216	--	1
Aroclor 1242	ND		ug/kg	216	--	1
Aroclor 1248	ND		ug/kg	144	--	1
Aroclor 1254	ND		ug/kg	216	--	1
Aroclor 1260	2360	P	ug/kg	144	--	1
Aroclor 1262	ND		ug/kg	71.9	--	1
Aroclor 1268	ND		ug/kg	71.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	71		30-150
Decachlorobiphenyl	79		30-150
2,4,5,6-Tetrachloro-m-xylene	13	Q	30-150
Decachlorobiphenyl	11	Q	30-150

BUILDING PRE-DEMOLITION SURVEY

Project Name: WSE
Project Number: 98350-02683
Lab Number: L1103471
Report Date: 03/24/11

SAMPLE RESULTS

Lab ID:	L1103471-03	Date Collected:	03/15/11 11:33
Client ID:	3	Date Received:	03/16/11
Sample Location:	11 HOPE ST., EAST LYME, CT	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	1,8082	Extraction Date:	03/21/11 17:00
Analytical Date:	03/22/11 12:35	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	03/22/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	03/22/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	248	--	1
Aroclor 1221	ND		ug/kg	248	--	1
Aroclor 1232	ND		ug/kg	248	--	1
Aroclor 1242	ND		ug/kg	248	--	1
Aroclor 1248	ND		ug/kg	165	--	1
Aroclor 1254	ND		ug/kg	248	--	1
Aroclor 1260	ND		ug/kg	165	--	1
Aroclor 1262	ND		ug/kg	82.6	--	1
Aroclor 1268	ND		ug/kg	82.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	74		30-150
Decachlorobiphenyl	73		30-150
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	84		30-150

Project Name: WSE
Project Number: 98350-02683
Lab Number: L1103471
Report Date: 03/24/11

SAMPLE RESULTS

Lab ID:	L1103471-04	Date Collected:	03/15/11 11:39
Client ID:	4	Date Received:	03/16/11
Sample Location:	11 HOPE ST., EAST LYME, CT	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	1,8082	Extraction Date:	03/21/11 17:00
Analytical Date:	03/22/11 12:48	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	03/22/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	03/22/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	283	--	1
Aroclor 1221	ND		ug/kg	283	--	1
Aroclor 1232	ND		ug/kg	283	--	1
Aroclor 1242	ND		ug/kg	283	--	1
Aroclor 1248	ND		ug/kg	189	--	1
Aroclor 1254	ND		ug/kg	283	--	1
Aroclor 1262	ND		ug/kg	94.3	--	1
Aroclor 1268	ND		ug/kg	94.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	97		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	108		30-150

Project Name:	WSE	**Lab Number:**	L1103471
Project Number:	98350-02683	**Report Date:**	03/24/11

SAMPLE RESULTS

Lab ID:	L1103471-04	Date Collected:	03/15/11 11:39
Client ID:	4	Date Received:	03/16/11
Sample Location:	11 HOPE ST., EAST LYME, CT	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	1,8082	Extraction Date:	03/21/11 17:00
Analytical Date:	03/22/11 12:48	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	03/22/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	03/22/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1260	1090		ug/kg	189	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	97		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	108		30-150

Project Name: WSE
Project Number: 98350-02683

Lab Number: L1103471
Report Date: 03/24/11

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082
Analytical Date: 03/22/11 13:02
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 03/21/11 17:00
Cleanup Method1: EPA 3665A
Cleanup Date1: 03/22/11
Cleanup Method2: EPA 3660B
Cleanup Date2: 03/22/11

Parameter	Result	Qualifier	Units	RL	MDL
PCB by GC - Westborough Lab for sample(s): 01-04 Batch: WG459550-1					
Aroclor 1016	ND		ug/kg	60.0	--
Aroclor 1221	ND		ug/kg	60.0	--
Aroclor 1232	ND		ug/kg	60.0	--
Aroclor 1242	ND		ug/kg	60.0	--
Aroclor 1248	ND		ug/kg	40.0	--
Aroclor 1254	ND		ug/kg	60.0	--
Aroclor 1260	ND		ug/kg	40.0	--
Aroclor 1262	ND		ug/kg	20.0	--
Aroclor 1268	ND		ug/kg	20.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	111		30-150

Lab Control Sample Analysis

Batch Quality Control

Project Name: WSE
Project Number: 98350-02683

Lab Number: L1103471
Report Date: 03/24/11

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB by GC - Westborough Lab Associated sample(s): 01-04 Batch: WG459550-2 WG459550-3								
Aroclor 1016	82		84		40-140	2		50
Aroclor 1260	85		83		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	89		87		30-150
Decachlorobiphenyl	92		91		30-150
2,4,5,6-Tetrachloro-m-xylene	95		93		30-150
Decachlorobiphenyl	115		110		30-150

BUILDING PRE-DEMOLITION SURVEY

Project Name: WSE
Project Number: 98350-02683

Lab Number: L1103471
Report Date: 03/24/11

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1103471-01A	Amber 250ml unpreserved	A	N/A	2	Y	Absent	PCB-8082LL-3540C(14)
L1103471-02A	Amber 250ml unpreserved	A	N/A	2	Y	Absent	PCB-8082LL-3540C(14)
L1103471-03A	Amber 250ml unpreserved	A	N/A	2	Y	Absent	PCB-8082LL-3540C(14)
L1103471-04A	Amber 250ml unpreserved	A	N/A	2	Y	Absent	PCB-8082LL-3540C(14)

*Values in parentheses indicate holding time in days

Project Name: WSE
Project Number: 98350-02683
Lab Number: L1103471
Report Date: 03/24/11

GLOSSARY

Acronyms

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when

Project Name:	WSE	Lab Number:	L1103471
Project Number:	98350-02683	Report Date:	03/24/11

Data Qualifiers

the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: WSE
Project Number: 98350-02683
Lab Number: L1103471
Report Date: 03/24/11

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

BUILDING PRE-DEMOLITION SURVEY
Certificate/Approval Program Summary

Last revised February 23, 2011 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB), 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D))

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E).)

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3,3'-Dichlorobenzidine, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NH3-H, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1. Organic Parameters: 608, 624, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
Drinking Water (Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

Non-Potable Water (Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl, V,Zn); 245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B;Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 1664A, SW-846 9010, 9030, 9040B, 9050A, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 5030B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050C, 9065,1311, 1312, 3005A, 3050B. Organic Parameters: SW-846 3540C, 3546, 3580A, 5030B, 5035, 8260B, 8270C, 8330, 8151A, 8015B, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 8270C-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 7196A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 8270C-SIM, 3540C, 3545, 3546, 3550B, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-04-1-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 9010B, 9030B.. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8015B, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 6[illegible] 03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2)

Non-Potable Water (Inorganic Parameters: EPA 1312. Organic Parameters: EPA 3510C, 5030B, 625, 624, 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 6010B, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3545, 3546, 3550B,

3580A, 3630C, 5035, 8015B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 $S2^{-}$D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Department of Defense Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 5220D, 5310C, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8270C, 8330A, 625, 8082, 8081A, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9010, 9012A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8270C, 8330A/B-prep, 8082, 8081A, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

Analytes Not Accredited by NELAP
Certification is not available by NELAP for the following analytes: **EPA 8260B:** Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline. **EPA 350.1** for Ammonia in a Soil matrix.

BUILDING DEMOLITION SPECIFICATIONS

SECTION 02051

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all sections within DIVISION 1 – GENERAL REQUIREMENTS that are hereby made a part of this Section. Note also all Alternates and Addenda.

B. For the purpose of this Section, the following definitions apply:
"Site" shall refer to 11 Hope Street located in East Lyme, Connecticut
"Contractor" shall refer to the asbestos abatement contractor.
"Engineer" shall refer to the Town of East Lyme and Weston and Sampson Engineers, Inc.
"Consultant" shall refer to EFI Global, Inc.
"Owner" shall refer to the Town of East Lyme, Connecticut.
"ACM" shall refer to asbestos-containing material.

1.02 RELATED REQUIREMENTS

A. Examine the attached Table 1 (inventory by Area), and all other Sections of the Specifications for requirements affecting the work of this Section whether or not such work is specifically mentioned in this Section.

B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.03 DESCRIPTION OF WORK

A. PROJECT DESCRIPTION

The Contractor shall furnish all labor, materials, equipment, and services for the removal and disposal of all specified ACM, as outlined in the attached Table 1, throughout the interior and exterior of the Site buildings.

1. The project involves the full containment, glove bag, and exterior removal of all specified ACM including green patterned linoleum, furnace insulation, light fixture paper insulation, chimney flashing, joint compound and associated sheetrock and chimney flue cement throughout the building.

2. Bidders are required to verify the quantities of all materials prior to the bid deadline, including the dimensions and locations of areas requiring abatement as well as the types of materials to be abated. If further investigation time is required for the quantity verification, arrangements shall be made as needed. This estimation shall be performed prior to the submission of the bid. Bidders shall inform the Consultant of any discrepancies between the quantities and types of materials specified herein and those verified to be present by the Bidder. If appropriate, an adjustment shall be made as to the types and/or quantities to be included in the Bid. If no discrepancies with the types and/or quantities of materials to be abated are brought to the attention of the Consultant prior to the Bid due date, it will be understood that the Bidders are in agreement with the

types and quantities of materials specified herein, and no change orders will be allowed for these materials.

3. Pre-cleaning and disposal of all debris present and clean up of contaminated items shall also be conducted in each work area. Refer to the attached Table 1 Inventory pertaining to asbestos abatement for specific locations of ACM.

4. In the event that additional (currently obscured) types and/or quantities of materials are to be removed, the Contractor shall contact the Engineer. No change orders shall be granted for the types of materials identified in these specifications. For a material to be verified as an extra, the Contractor shall notify the Consultant of the conditions believed to warrant a claim, prior to the disturbance of the material. The Consultant shall field verify the Contractor's claim, and if deemed an extra, the contract price shall be adjusted by the unit price or through negotiation. No claims for any increase in the contract price shall be considered if the material has been removed by the Contractor without prior authorization by the Consultant.

5. The locations and quantities of the ACMs listed in Table 1 are approximate only. The Contractor is responsible for identification, field verification, and removal of all ACMs specified in the Table 1 Inventory and as present at the Site.

6. The Contractor is responsible for conducting all OSHA related safety and structural investigations for general, flooring, and roofing conditions within the buildings that could pose a hazard to their workers. The Contractor shall include in their base bid all costs for performing these investigations and corrective measures required to abate any unsafe conditions and protect workers during abatement activities.

7. The Contractor is responsible for demolition of concrete/wood/sheetrock/plaster floors/walls/ceilings, drop ceilings, etc. to access, investigate, and remove all ACMs specified. The Contractor shall include in the base bid all costs for demolition to access all ACMs and hazardous materials identified herein. Non-asbestos-contaminated construction debris generated while performing demolition to access activities may be neatly stored within the buildings and will be disposed by others. Non-asbestos contaminated construction debris may not be stored within asbestos abatement work areas and must be stored neatly in locations approved by the Consultant and Owner.

B. GENERAL SCOPE OF WORK

The following is the General Scope of Work at a minimum, required to be performed by the Contractor for asbestos abatement work in each of the work areas identified below. The Contractor shall adhere to the Scope of Work outlined below and depicted by the drawings as well as any additional requirements stated herein.

1. Work area preparation, including pre-cleaning, installation of critical barriers and polyethylene sheeting, construction of decontamination facilities, work area enclosures, sealing, isolation, and other activities as directed by the Consultant.

2. Installation and operation of HEPA filtration units sufficient to achieve a minimum of four to six air changes per hour in each containment. The exact locations of HEPA filtration units, decontamination units, and other stationary equipment shall be coordinated with other contractors, Owner, and the Consultant.

3. Removal and disposal of all specified asbestos-containing materials (ACM), asbestos contaminated materials and non-asbestos containing materials as specified in the Table 1 Inventory.

4. Pre-cleaning of all asbestos-containing debris, as necessary, in all work areas prior to abatement.

5. Encapsulation of all abated surfaces in each work area.

6. Furnishing of all labor, materials, equipment, insurance, and services required for all work included in this specification.

7. Compliance with all applicable federal, state, and local regulations, as well as, all requirements set forth in these specifications.

8. Decontamination, teardown, and clean up following abatement activities.

9. Performance of any other work or activities required by this specification, applicable regulations, or as necessary to perform a complete job to the satisfaction of the Owner and Consultant.

10. The Consultant reserves the right to collect samples of any suspect ACM in order to verify that the asbestos has been satisfactorily removed by the Contractor in accordance with the Specifications.

C. SPECIFIC SCOPE OF WORK

The following Work shall be conducted for this project. Examine all Asbestos Abatement Sketches and the attached Table 1 Inventory pertaining to asbestos for full extent and location of work to be conducted, including existing piping, equipment and accessories, equipment and pipe/fitting insulation, roofing materials, flooring, ceilings, walls, and other asbestos-containing materials removal locations.

1. General Building Areas

   a. The Contractor is responsible for all hookups to existing water and electricity at the Site to conduct the required asbestos abatement activities. The electric service will remain on until abatement is complete. The contractor will coordinate electric disconnect with CL&P. The Contractor is responsible for retaining licensed plumbers to perform water hookups as necessary to perform the asbestos abatement activities specified herein. The Contractor is responsible for payment of all permit and connection fees. The Contractor is responsible for the installation of temporary lighting in all work areas, backflow protection, sanitary facilities, and shall include all costs to provide a licensed electrician to assess the facilities and provide generators, transformers and temporary electrical hookups as necessary. The Contractor shall supplement the existing electricity available at the site with generators as necessary throughout the project, due to temporary or permanent electrical shutdowns.

   b. Remove and dispose of ACM from all specified equipment, piping, floors, walls,

roofs, and other components, which are listed in the attached Table 1 Inventory. Coordinate this work with other contractors at the site and the Consultant. Coordinate all system shutdowns with the Consultant and Owner in advance.

2. Exterior

The Contractor is responsible for the removal of all exterior ACM chimney flashing.

D. PROJECT SCHEDULE

The project shall begin as soon as the 10 business day notifications take effect and upon receipt of written authorization to proceed from the Consultant. The Contractor is responsible to complete work in each area as specified on the attached project schedule. Completion of work includes obtaining satisfactory air clearance results and tear-down of each work area within the area specified on the attached schedule.

1.04 SEQUENCE OF WORK

The following provisions shall apply for asbestos abatement work as identified by this section. The Contractor shall apply these provisions to all work areas throughout the buildings.

A. The Contractor shall decontaminate, remove and properly dispose of all specified ACM located throughout each identified work area.

B. Prior to the commencement of the work, all stored items and general items in each area, as well as, all movable furnishings and other miscellaneous items in all work areas deemed to be non-contaminated, except as noted herein, shall be removed from each work area by the Contractor and left for disposal by others. All non-contaminated non-movable items in all work areas, including but not limited to electrical panels, equipment, shelving, etc. shall be covered with two (2) layers of 6-mil polyethylene sheeting and sealed with duct tape.

C. A three-chambered decontamination unit shall be erected at the entrance to each work area. The three-chambered decontamination unit shall consist of a clean room, a shower room, and an equipment room.

D. All critical barriers shall be sealed with two (2) layers of six-mil polyethylene sheeting and negative pressure established.

E. The Contractor shall pre-clean all floor areas, floor drains, and non-movable items of any asbestos debris present. Pre-cleaning shall include the use of wet misting, wet wiping and/or HEPA vacuuming of all affected surfaces.

F. All work shall take place under full containment or using glove bag techniques except for exterior work.

G. All work shall be performed in accordance with all federal, state, and local regulations governing asbestos abatement. The Contractor shall assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling and disposal of asbestos waste, and protection of workers, visitors to the work site, and persons occupying areas adjacent to the work site.

H. The scheduling and sequencing of the Work of this Contract shall be determined by the Consultant and the Owner. Multiple and distinct phases needing separate notifications may be required.

1.05 WORK INCLUDED

The total scope of work shall not be based solely on the information provided in this specification. The Contractor is required to perform quantity take-offs and measurements of the amount of material to be removed and decontaminated using all Drawings, and based on a site visit. Work shall be based on the Contractor's own quantity take-offs of the work required by examination of the drawings and site conditions.

1.06 SPECIAL CONSIDERATIONS

The Owner will pay for the first set of final clearance air sampling and analyses for each work area as needed. In the event that these analyses do not pass the clearance criteria, all subsequent air sampling and analyses for the affected work areas that need to be rerun will be paid for by the Contractor. Phase Contrast Microscopy (PCM) shall be utilized for clearance of all areas. Should additional materials be discovered at the site they may require Transmission Electron Microscopy (TEM) air clearance methods per Connecticut Department of Public Health regulation. All additional monitoring and sampling costs will be automatically deducted from the Contractor's contract price until the area in question passes the clearance criteria established in this section.

1.07 SUBMITTALS

A. Before preparations are allowed to begin, the Contractor shall submit the following to the Consultant for approval:

1. Copies of all notifications, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion;

2. Copies of Contractor's DPH licenses for asbestos;

3. A sketch of the proposed containment(s) that includes all entrances, HEPA exhausts and critical barriers;

4. A proposed timetable for the complete job that shows the preparation, removal and disposal, clean up, testing, and teardown portions of the job for each work area. A critical path showing completion dates for each area shall be included;

5. Proof of the abatement supervisor's certification and training, including the most recent refresher course completed and current DPH licenses for asbestos;

6. Proof of each asbestos abatement worker's certification and training, including the most recent refresher courses completed and current DPH licenses for asbestos;

7. Written site-specific Respiratory Protection Program for employees throughout all phases of the job, including make, model and NIOSH approval numbers of respirators to be used on this specific job;

8. Proof that the asbestos abatement supervisor and workers have been fit-tested within the past twelve months for using both a negative-pressure respirator equipped with HEPA filter cartridges and a PAPR;

9. Proof that the abatement supervisor and workers have been examined by a qualified physician within the past 12 months, and are capable of wearing respiratory protection and are able to perform asbestos abatement work and other related activities;

10. Proposed electrical safeguards to be implemented, including but not limited to location of transformers, GFCI outlets, lighting, and power panels necessary to safely perform the job, including a description of electrical hazards safety plan for common practices in the work area;

11. A list of all equipment to be used on site, by make and model, including ventilation equipment, HEPA vacuums, etc.;

12. Chain of Command of responsibility at work site including supervisors, foreman, and competent person, their names, and resumes;

13. Proposed Emergency Plan and route of egress from work areas in case of fire or injury, including the name, directions/map and phone number of nearest medical assistance center;

14. The name and address of the Contractor's personal air monitoring and testing laboratory including certification of Connecticut DPH accreditation and proof of NIOSH proficiency in the asbestos P.A.T. Program;

15. An MSDS or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for all products and materials proposed for use on the project. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated. A copy of the Contractor's complete OSHA Hazard Communication Standard will also be submitted and be kept on site at all times describing the Contractor's Asbestos and Hazardous Materials HazCom Program;

16. A current negative exposure assessment in accordance with OSHA 1926.1101 providing recent data (less than six months old) showing personal exposures to airborne asbestos during Class I operations for comparable workers. This data must show that workers' exposures to airborne asbestos on an eight-hour time weighted average (TWA) basis are less than 0.1 fibers per cubic centimeter of air (f/cc);

17. Name, address, and ID number of the asbestos waste hauler, and proposed disposal site(s);

18. Any other documentation that applies and is called for by this or other sections of the specifications;

19. No work on the project will be allowed to begin until Owner and Consultant as listed herein approve the Pre-Job Submittals. Any delay caused by the Contractor's refusal to submit this documentation in a timely manner does not constitute a cause for change order or a time extension;

20. Contractor's written site-specific Health and Safety Plan that includes Hazcom, Respiratory Protection, Lockout/Tagout and Confined Space Entry Programs with site-specific written plans; and,

B. Upon completion of the asbestos abatement work, the Contractor shall submit the following to the Consultant for approval:

1. All manifests and landfill receipts detailing disposal of all asbestos and asbestos-containing waste materials generated by the work.

2. All analytical results of personal asbestos air samples collected in accordance with OSHA regulations to verify that the 8-hour time weighted average (TWA) concentrations of asbestos fibers in the breathing zone of the workers has not exceeded the permissible exposure limit (PEL) of 0.1 f/cc.

3. A notarized copy of the entry-exit logbook.

1.08 TRAINING AND QUALIFICATIONS

A. Worker Training

All workers who work on this project shall be provided training, at a minimum, on the following topics:

1. The health hazards of asbestos including the nature of asbestos related diseases, routes of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods, and health basis for standards.

2. Personal protective equipment including the types and characteristics of respirator classes, limitations of respirators, proper selection, inspection, donning, use, maintenance and storage of respirators, field testing the face piece to face seal (positive and negative pressure fit tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit, selection and use of disposable clothing, use and handling of washable clothing, non-skid shoes, gloves, eye protection, and hard hats.

3. Medical monitoring requirements for workers including required and recommended tests, reasons for medical monitoring and employee access to records.

4. Air monitoring procedures and requirements for workers including description of equipment and procedures, reasons for monitoring, types of samples and current standards with recommended changes.

5. Work practices for asbestos and hazardous materials abatement including purpose, proper construction and maintenance of airtight plastic barriers, job set-up of airlocks, posting of warning signs, engineering controls, electrical and ventilation system lockout, proper working techniques, waste clean up, storage and disposal.

6. Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking, and chewing in the work area.

7. Special safety hazards that may be encountered including electrical hazards, air contaminants (CO, wetting agents, encapsulants), fire and explosion hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress, and noise.

8. Workshops allowing both supervisory personnel and abatement workers the opportunity to observe and experience the construction of containment barriers and decontamination facilities.

9. Lockout/Tagout and Confined Space Entry procedures.

B. Site Supervisor Qualifications

1. The Contractor shall provide one Site Supervisor, whose responsibilities include coordination, safety, security, and execution of all phases of the asbestos and hazardous materials abatement project. The Site Supervisor will not be used as an abatement worker, and will be assigned full-time to the project.

2. The Site Supervisor shall be fully qualified in all aspects of asbestos and hazardous materials abatement practices and procedures, and have a one-week asbestos training course each for asbestos within the previous year prior to the commencement of asbestos related work. The asbestos training course will cover all topics listed above as well as training in contract specifications, liability insurance and bonding, legal considerations related to abatement, establishing respiratory protection medical surveillance programs, EPA and OSHA record-keeping programs, as well as any other topics requested by the Owner.

3. At least one licensed asbestos supervisor should be on site at all times who is certified in CPR and Emergency First Aid by an appropriate authority, as well as having received the required training under the OSHA Bloodborne Pathogen Standard.

4. The Site Supervisor shall be fully qualified and experienced in all aspects of hazardous waste operations to be conducted as part of this work and shall have an additional 8 hours of training in managing Hazardous Waste Operations.

1.09 REGULATORY SUBMITTALS

A. The Contractor shall notify the following agencies in appropriate manner and place of impending work, and shall provide evidence of notifications at the pre-construction meeting:

1. Connecticut Dept. of Public Health – Asbestos Program
410 Capitol Avenue
Hartford, Connecticut 06134-0308
(10 business days in advance)

2. U.S. Environmental Protection Agency
J. F. Kennedy Federal Building
Boston, Massachusetts 02203
(10 working days in advance)

3. Local Fire and Police Departments, Building Department, and other state or town agencies as required by law or ordinance.

B. Permits

The Contractor shall be responsible for securing and paying for all necessary permits for asbestos and hazardous materials related work, including hauling, removal and disposal, building, cut and torch, fire watch, tank permits, and materials usage, sidewalk Police and Fire details, or any other permits required to perform the specified work.

C. Fees, Licenses, Patents, and Copyrights

1. The Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or process in the performance of the job specified herein. The Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights.

2. The Contractor shall hold the Owner and the Consultant harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights.

3. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing fee or royalty fee for use in the performance of the job, the Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such rights.

4. The Contractor shall be responsible for costs of all licensing requirements, where applicable, and notification requirements and all other fees related to the Contractor's ability to perform the work in this section.

1.10 SAFETY CONSIDERATIONS

A. This project is subject to compliance with Public Law 91-596, "Occupational Safety and Health Act of 1970" (OSHA), with respect to all Rules and Regulations pertaining to construction, including Volume 36, Numbers 75 and 105, of the Federal Register, as amended, and as published by the U.S. Department of Labor.

B. In addition to any detailed requirements of the Specification, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storage of asbestos, lead and other hazardous waste materials.

C. All staging and scaffolding (if needed) shall be furnished and erected by the Contractor in accordance with all applicable requirements, and be maintained in safe condition by him at no additional cost to the Owner.

D. The Contractor is responsible for using safe procedures to avoid electrical hazards. When a hazard exists, work will be stopped and power will be shut off and checked before work begins again. All electrical panels and exposed wires within the work site shall be de-energized prior to the commencement of any wetting or removal operations. All extension cords and power tools used within the work area shall be attached to Ground Fault Circuit Interrupters (G.F.C.I.) in accordance with 1910.120 and the Contractor's Lockout/Tagout and Confined Space Entry programs.

BUILDING DEMOLITION SPECIFICATIONS

1.11 SECURITY

A. The Consultant will provide specific access as required during the project to the Contractor and personnel assigned to the project. The access shall be determined by the Consultant. The Contractor will be responsible for the security of each building involved in the abatement project. The Contractor shall maintain security in all buildings using appropriate secure barriers and locks. It will also be the Contractor's responsibility to allow only authorized personnel into each work area, and to secure all assigned entrances and exits at the end of the workday. Authorized personnel include licensed Contractor staff, the industrial hygienist, and all other personnel with the appropriate training, medical approval, respirator fit testing, and personal protective equipment. The Contractor shall cover each window, door, grate, or other opening made by abating these components with secured plywood coverings to prevent unauthorized access into the building.

B. Any person entering or leaving the contained areas must sign the Contractor's bound logbook and enter the date and time. The logbook must be located immediately outside the entrance to the Decontamination Unit at all times, and be open for inspection by the Consultant.

1.12 REFERENCES

The following references are cited as applicable publications:

A. Environmental Protection Agency
Asbestos Regulations (NESHAPS) Title 40 CFR Part 61, as currently amended. Guidance for Controlling Friable Asbestos Containing Materials in Buildings, Final Rule and Notice. Asbestos Hazard Emergency Response Act (AHERA) Title 40 CFR Part 763.

B. Occupational Safety and Health Administration
Title 29 CFR 1910.1001 (amended)
Title 29 CFR 1926.1101 (amended)
Title 29 CFR 1926.62 (amended)

C. State of Connecticut
Department of Public Health
Section 19a-332a-1 to Section 19a-332a-16 of Regulations of Connecticut State Agencies (RCSA)

D. U.S. Department of Transportation Regulations
49 CFR Parts 172 and 173

E. All regulations by these and other governing agencies in their most recent version are applicable. These specifications refer to many requirements found in these references, but in no way intend to cite or reiterate all provisions therein or elsewhere. It is the Contractor's responsibility to know, understand, and abide by all such regulations and common practices.

F. Other provisions contained in these references may from time to time during the execution of this contract be enforced by the Owner at his own discretion.

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G. Toxic Substances and Control Act (TSCA) (40 CFR 761).

H. Department of Transportation regulations for transporting PCB/ Mercury-containing waste.

I. Hazard Communication Standard (29 CFR 1926.59).

J. Hazardous Waste Operations and Emergency Response (29 CFR 1910.120).

K. National Contingency Plan (CERCLA, Section 105).

L. Spill Prevention Control and Countermeasures Plan (40 CFR, Part 112).

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

The Contractor shall provide new materials and new or used equipment in undamaged and serviceable condition. Only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards, are to be used during the project.

A. Fire Extinguishers

The Contractor shall provide multi-purpose ABC minimum rating to A40BC fire extinguishers. The Contractor shall comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers." Fire extinguishers shall be located where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher inside each work area in the Equipment Room and one outside each work area in the Clean Room.

B. Construction Lumber

Construction lumber for critical barrier walls shall consist of nominal, fire-retardant, 2" x 4" framing, sixteen inches center to center.

C. Plastic Sheeting

The Contractor shall provide non-combustible, fire-retardant, 6-mil thick clear, frosted, or black plastic sheeting in the largest size possible to minimize seams in accordance with local fire department requirements. Spray plastic will not be allowed for use on this project.

D. Adhesive Materials

The Contractor shall provide duct tape in 2" or 3" widths, with an adhesive that is formulated to aggressively stick to plastic sheeting. The Contractor may also provide spray adhesive in aerosol cans that is specifically formulated to stick tenaciously to plastic sheeting.

E. Shower Assembly

1. The Contractor shall provide a leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. The Contractor shall structurally support the unit as necessary for stability and equip it with a hose bib, mounted at approximately 4'-0" above drain pan.

2. The Contractor shall provide a factory made shower-head producing a spray of water that can be adjusted for spray size and intensity. The Contractor shall feed shower with water mixed from hot and cold supply lines, arranged so that control of water temperature, flow rate, and shutoff is from inside shower without outside aid.

3. The Contractor shall provide a totally submersible waterproof sump pump with an integral float switch. The unit shall be sized to pump two times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. The unit shall be capable of

pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. The Contractor shall adjust float switch so that a minimum of 3" remains between top of liquid and top of sump pan.

F. Negative Air Filtration System

The Contractor shall provide air-filtering equipment capable of filtering particles to 0.3 micrometers at 99.97% efficiency and of sufficient quantity and capacity to cause a complete air change within the work area at least once every 15 minutes. Such equipment shall exhaust the filtered air so as to maintain a negative pressure inside the work area. Air shall flow in through the Decontamination Unit and exhaust through the negative air filtration unit by means of flexible duct leading outside the work area, preferably outside of the building. Negative air filtration shall be in operation at all times.

G. HEPA Vacuum

The Contractor shall utilize high efficiency filter vacuums to filter particles of 0.3 micrometers or larger at 99.97% efficiency or greater. The Contractor shall obtain HEPA vacuum attachments, such as various size brushes, crevice tools, and angular tools to be used for varied application, and service the HEPA vacuum routinely to assure proper operation. Caution shall be used any time the vacuum is opened for HEPA filter replacement or debris removal. Operators shall wear protective clothing and respirators when using the HEPA vacuum. Vacuuming by conventional means is unacceptable.

H. Amended Water

For wetting prior to disturbance of asbestos-containing materials, the Contractor shall use an amended water solution. The Contractor shall provide water to which a commercial surfactant (i.e., not dish detergent) has been added. The Contractor shall use a mixture of surfactant and water, which results in wetting of the asbestos-containing material and retardation of fiber release during disturbance of the material, equal to or greater than that provided by the use of one ounce of a surfactant, consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

I. Disposal Bags

The Contractor shall provide appropriately labeled 6-mil thick leak tight plastic bags of sufficient size for application.

J. Water Service

All temporary water connections to the Owner's water system shall include back-flow protection. The Contractor shall provide heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into the work area and to the Decontamination Unit. The Contractor shall provide a UL rated 40-gallon electric hot water heater to supply hot water for each Decontamination Unit shower.

K. Electrical Service

1. The Contractor shall provide temporary power service to the Decontamination Unit sub panel with minimum 60 amp, 2 pole circuit breaker or fused disconnect connected to the

auxiliary power source. The sub panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work. The Contractor shall comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electric service.

2. The Contractor shall provide identification-warning signs of voltage differences at power outlets that are other than 110-120 volt power and provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

3. The Contractor shall provide receptacle outlets equipped with ground-fault circuit interrupters (GFCI), with reset button and pilot light, for plug-in connection of power tools and equipment. No electrically powered tools or equipment shall be operated without a Ground-Fault Interrupter. The Contractor shall provide the Consultant with documentation proving that the GFCI's are in proper working order.

4. The Contractor shall use only grounded extension cords. Use "hard-service" cords where exposed to abrasion and traffic. Single lengths of electric cord shall be used or waterproof connectors shall be used to connect separate lengths of electric cords, if single lengths will not reach areas of work.

5. The Contractor shall provide general service incandescent lamps of wattage required for adequate illumination (in accordance with OSHA 29 CFR 1910.56, "Illumination"). Lamps shall be equipped with guard cages or tempered glass enclosures where fixtures are exposed to breakage by construction operations. Exterior fixtures shall be provided where fixtures are exposed to the weather or moisture.

BUILDING DEMOLITION SPECIFICATIONS

PART 3 - PROJECT EXECUTION

3.01 GENERAL CONSIDERATIONS

A. Approvals And Inspection

All temporary facilities, work procedures, equipment, materials, services, and agreements must strictly adhere to and meet these contract specifications along with EPA, OSHA, NIOSH, regulations and recommendations as well as any other federal, state, and local regulations. Where there exists overlap of these regulations, the most stringent one applies. All work performed by the Contractor is further subject to approval of the Consultant. Modifications to these isolation and sealing methods, procedures, and design may be considered if all elements of proper and safe procedures to prevent contamination and exposure can be demonstrated. Written modifications to these specifications must be made to the Consultant for review before they can be used for work on this project.

B. Damage And Repairs To The Work Site

Abatement and disposal shall be performed without damage to the buildings, including, but not limited to, structural members, ceilings, walls, pipes, duct work, light fixtures, etc, except where specified under demolition. The Contractor shall provide protection of these items and materials as part of the work area preparation. The Contractor shall not perform any demolition activity that could result in the loss of integrity of any building or equipment-related structural member. Where asbestos abatement activity causes damage, the Contractor shall patch, repair, replace or otherwise restore same to its original condition at no additional cost to the Owner.

C. HVAC Systems

Wherever possible, shut down and lock out/tag out electric power to all work areas. Provide temporary power and lighting according to these specifications. Coordinate with the Consultant in advance prior to conducting shutdowns and lockouts. Whenever the work area cannot be completely de-energized, the Contractor will provide the Consultant with a plan for protecting workers and electrical equipment. Shut down and lock out all heating, cooling, and air conditioning system (HVAC) components that are within, supply, or pass through the work area. This will be done with the advice and counsel of the Consultant, but the Contractor is responsible to ensure all systems are shut down and it is impossible to re-energize until clearance is obtained.

1. Investigate the work area and agree on pre-abatement condition with the Owner.

2. Seal all intake and exhaust vents in the work area with tape and 2 layers of 6-mil polyethylene.

3. Seal any seams in system components that pass through the work area.

4. Remove all HVAC system filters and place in labeled, 6-mil polyethylene bags for staging and eventual disposal as asbestos-contaminated waste.

D. Barriers And Isolation Areas

BUILDING DEMOLITION SPECIFICATIONS

1. The Contractor shall construct and maintain suitable critical barriers within the building to separate work areas from spaces occupied by the Owner. Critical barriers shall be of sufficient size and strength to prevent building occupants, the public, and others from entering the work areas.

2. Warning signs shall be posted on all critical barriers at the commencement of the work area preparation, as required in 1926.1101 of the Occupational Safety and Health Standards.

3. The signs shall display the proper legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in OSHA Standard 1926.1101. The signs will read as follows:

   DANGER
   ASBESTOS
   CANCER AND LUNG DISEASE HAZARD
   AUTHORIZED PERSONNEL ONLY
   RESPIRATOR AND PROTECTIVE CLOTHING
   REQUIRED IN THIS AREA

4. The signs shall be posted at the perimeters of asbestos removal, demolition or construction areas where the asbestos-containing material to be removed exists.

5. The Contractor shall maintain all temporary and critical barriers, facilities and controls as long as necessary for the safe and proper completion of the work. All containments shall consist of floors and walls covered with 2 layers of 6-mil poly sheeting, except in those instances where such floors are deemed impervious by the Consultant.

6. Any breaches in the containment will be corrected at the beginning of each shift and as necessary during the workday. Work will not be allowed to commence until all control systems are in place and operable.

7. No barriers shall be removed until the work areas are thoroughly cleaned and all debris has been properly bagged and removed from work areas, and the air has passed final clearance tests, in accordance with provisions detailed herein.

3.02 ACM LOCATION PREPARATION AND REMOVAL

A. Area Cleaning And Preparation

1. PRE-CLEANING: In areas designated under the Sequence of Work as having asbestos debris on surfaces, remedial cleaning will be required. Cleaning will be done using HEPA vacuums and wet methods. Pre-removal cleaning will be required in areas where visible asbestos debris is present on the floors and other surfaces as described in Section 1.0. Respiratory protection and protective clothing will be required as defined by OSHA regulation 1926.1101. All pre-cleaning will be inspected by the Consultant. During pre-cleaning activities, the work area shall have its primary and critical barriers in place and be under adequate negative pressure as described herein. Any changes to this shall be at the approval of the Consultant. It should be noted that pre-cleaning shall take place in all work areas prior to commencement of abatement. Pre-cleaning shall include wet wiping and HEPA vacuuming of the floor areas and non-movable items. In addition, all movable items deemed "contaminated" by the Consultant shall also be pre-cleaned.

2. PRIMARY BARRIERS: Prior to the construction of each asbestos abatement area, all primary barriers shall be sealed with a minimum of one layer of 6-mil plastic sheeting and duct tape on plywood. Primary barriers consist of all windows, vents, closed and locked doors, and openings to adjacent spaces from the work area. Plywood shall be utilized to cover any doors, elevators, or other entrances to the work area(s) that may be accessible by unauthorized personnel.

B. Decontamination Unit And Procedures

1. It is the Contractor's responsibility to provide decontamination chambers consisting of a Clean Room, Shower Room, Equipment Room, and Equipment/Waste Decontamination Room for personnel and waste/equipment involved in asbestos abatement. Each of the four rooms shall be of sufficient size to accommodate authorized personnel. Shower shall be completely functional as described in 3.02 (B)(7).

2. Each room shall be separated from other rooms by a double flap of 6-mil polyethylene sheeting acting as an airlock. This shall be designed to minimize fiber migration and airflow between the decontamination unit rooms. A separate equipment and waste decontamination unit shall also be constructed. This can be adjacent to the personnel shower room.

3. The rooms shall be framed with 2" X 4" lumber, masked, sealed and attached to the entry/exit ways of asbestos/lead work areas.

4. The rooms together shall be referred to as the Decontamination Unit. A Decontamination Unit will be required for each separate containment area, if work is to be divided into sections.

5. For those areas deemed acceptable for the utilization of glove bags, a remote Decontamination Unit can be used.

6. The Equipment Room shall serve as a transfer room for decontamination procedures to occur in. This room shall be vacuumed and washed whenever necessary in order to prevent asbestos dust and debris accumulations or when required by the Consultant. Workers leaving the containment shall remove and dispose of disposable protective suits in the Equipment Room and proceed into the Shower Room.

7. The Shower Room shall contain an appropriate number of shower heads supplied with hot and cold water adjustable at the tap. Uncontaminated soap, shampoo, and towels shall be available at all times. The shower water shall be drained, collected, and filtered through a system with at least 5.0-micron particle size collection capability. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtration system by large particles. Filtered wastewater shall either be discharged in accordance with the applicable local codes or otherwise disposed of as asbestos waste. Contaminated filters shall be disposed of as asbestos waste.

8. The Clean Room shall store abatement workers' clean protective clothing and clean respirator equipment. Contaminated clothing, respirators, tools, equipment, or other

materials shall not be allowed into the Clean Room or beyond. The Clean Room will serve as an access for personnel entering the work area, and for the donning of respiratory protection and protective clothing. The Contractor shall provide space in the Clean Room for the workers' personal clothing. This shall be in the form of lockable lockers.

C. HEPA Filtration

Adequate negative pressure shall be provided within the enclosure as specified below.

1. After asbestos work area is totally isolated, and prior to commencement of work, the Consultant will perform a visual inspection of the work area. This will consist of checking the integrity of barriers including smoke testing the containment if deemed necessary by the Consultant. This does not in any way relieve the Contractor's responsibilities to ensure the isolation of the work area. The volume of air within the contained work area shall be changed a minimum of four (4) times per hour. A pressure differential reading of -0.02 inches of water shall be maintained in the negative pressure work area relative to adjacent areas. A manometer with a strip chart recorder shall be used to show that the proper pressure differential is being maintained.

2. Equipment used for producing a negative pressure work area shall have a filtering device that is at least 99.97% efficient at a 0.3-micron pore size. Filters meeting these standards are referred to as High Efficiency Particulate Absolute (HEPA) filters. The HEPA filtration units shall be equipped with the following:

   a. Magnehelic gauge to monitor the unit's air pressure difference across the filters and be able to interpret magnehelic readings to cubic feet per minute (CFM).

   b. An affixed label, clearly marked and conspicuous, showing the most recent installation date and hour reading of the primary internal HEPA filter.

   c. A clock to record the unit's operation time.

   d. Automatic shut off for filter failure or absence.

   e. Audible alarm for unit shutdown.

   f. Amber flashing warning light for filter loading.

   g. The unit must be equipped with a safety system that prevents it from being operated with the HEPA filter in an improper orientation.

   h. All flexible ducting, vent tubing, adapter plates and other equipment used for the passage of filtered air shall be undamaged, uncontaminated, and free of air leaks at all points.

3. Pre-filters shall be changed frequently during the abatement.

4. All HEPA units shall exhaust to the outside of the building. All HEPA units shall be DOP tested on-site by the Contractor.

5. Air movement shall flow uninterrupted from outside the work area through the

Decontamination Unit into the work area. There shall be no other openings for air to enter the containment unless approved by the Consultant in writing.

6. HEPA filtration units shall be placed as far as possible from the air intake to the containment to prevent short cycling of fresh air.

7. This containment, along with the decontamination chamber, shall constitute the critical containment of the work area from the surrounding areas. All openings to this critical containment are to be sealed except where air must enter the work site due to the use of exhaust equipment.

8. Unless approved by the Consultant, air shall enter the critical containment only through the Decontamination Unit. A pressure differential meter will be installed and maintained. If pressure differential drops below -0.02 inches of water, stop work until proper negative pressure is restored.

9. Written modifications to these isolation and sealing methods, procedures, and design may be considered if all elements of proper and safe procedures to prevent contamination and exposure can be demonstrated.

10. Written modifications to these specifications must be made to the Consultant for review before they can be used for work on this project.

D. ACM Removal

1. Asbestos removal will not begin until the Consultant has given authorization to proceed. This authorization will be given after the removal area has passed a visual inspection by the Consultant based on the criteria presented herein. The Owner reserves the right to inspect the work area prior to start of abatement. The Owner also reserves the right to inspect the work area at any time and to order the Contractor to stop work.

2. All asbestos-containing material shall be removed utilizing full containment and as appropriate, glove bags (for straight runs of pipe/fitting insulation only), and negative air filtration. All materials shall be sufficiently saturated/wetted to reduce fiber release so that the airborne fiber concentration does not exceed the established OSHA Permissible Exposure Limits (PEL's).

3. Dry removal will not be permitted at any time during this project.

4. All asbestos-containing material shall be carefully removed and placed into double 6-mil polyethylene bags or fiber drums for disposal. All bags, containers or wrapped materials transported out of the work area shall be labeled with preprinted labels required by Federal EPA, OSHA and the Department of Transportation regulations. The name of the waste generator (Owner) and the project location address shall also be placed on each bag/drum.

5. Fine cleaning of residual asbestos-containing material shall consist of carefully scraping or brushing the material from surfaces. The recommended method for brushing a substrate after gross removal has taken place is to use a nylon brush. Wetting of the substrate shall also occur while this brushing is performed, since the chance of airborne fiber generation during fine cleaning still exists.

6. Air testing will be performed continuously outside the enclosed asbestos areas. If fiber concentrations exceed 0.010 fibers/cc, or background levels, work shall stop and the Contractor shall perform clean-up activities in the affected areas and check the integrity of all barriers.

7. Clean-up activities shall include but not be limited to wet-wiping and vacuuming surfaces with a HEPA equipped vacuum. Work may continue only after the source of contamination is identified, corrected, and proper cleaning activities are implemented.

8. Air testing will be performed by the Consultant on site in the affected areas. If the results of these air tests are not below 0.010 fibers/cc, the Contractor shall perform a thorough decontamination of the affected areas.

9. After brushing and scraping, surfaces shall be free of visible debris and fibers. A final wipe-down of the substrate with wet, lint-free cloths shall take place in order to ensure proper cleaning. All surfaces including floors, walls, ceilings, and suspended ceiling grid-work shall also be HEPA vacuumed clean.

10. All visible asbestos-containing material is to be removed by the Contractor before encapsulation procedures are allowed to begin. The Consultant will conduct an inspection of the work area prior to giving approval to begin encapsulation of the work area. The removal substrate must be clean and bare, and the entire work area must be free and clear of any suspect material for the Contractor to pass this visual inspection and begin encapsulation.

E. Glove Bag Removal

The removal of asbestos by use of the glove bag shall be limited to the removal of asbestos-containing insulation from straight runs of pipe fittings, elbows, and pipes. The preparation of the work area for glove bag removal shall include the following:

1. A minimum of two persons is required to perform a glove bag removal project. A third person may be required to conduct air monitoring and assist with supplies.

2. The work area where the technique is to be utilized shall be roped off and warning signs posted on the perimeter to prevent unauthorized personnel from entering the work area.

3. A personnel decontamination enclosure system and waste load-out enclosure system, which may be remote, must be constructed prior to any preparation work.

4. A local isolation enclosure system, as specified herein, is to be constructed which encloses all pipe and fitting insulation to be removed.

5. Workers shall double-suit before entering the area, remove one suit upon exiting, and proceed to the remote decontamination system for decontamination.

6. All necessary materials and supplies shall be brought into the work area before any removal begins.

7. Never perform glove bag removal on pipes over 150^{0}F. For pipes where this temperature is exceeded, full containment removal will be required.

8. Removal procedures shall be conducted as follows:

   a. A visual inspection of the pipe where the work will be performed shall be made to determine if any damaged pipe covering (broken lagging, hanging, etc.) exists. If there is, the pipe shall be wrapped in polyethylene plastic and fully secured with duct tape. This procedure should prevent high airborne fiber concentrations from occurring during the glove bag work caused by pipe lagging, hanging several feet or even several yards away that may be jarred loose by the activity. Debris on the floor and other surfaces that has accumulated and contains asbestos must be cleaned up as necessary.

   b. If the pipe is undamaged, one layer of duct tape shall be placed around the pipe at each end of where the glove bag will be attached. This permits a good surface to which to seal the ends of the glove bag, and it minimizes the chance of releasing fibers when the tape at the ends of the glove bag is peeled off at the completion of this piece of work.

   c. Slit the top of the glove bag open (if necessary) and cut down the sides to accommodate the size of the pipe (about two inches longer than the pipe diameter).

   d. Place the appropriate tools into the pouch located inside the glove bag. This will usually include the bone saw, utility knife, rags, scrub brush, wire cutters, tin snips, and pre-cut wetable cloth. Cut out a donut shape in the cloth with the inner diameter ½-inch smaller than the diameter of the pipe beneath the insulation. The outer diameter of the donut should be 3 inches longer than the diameter of the pipe insulation being removed. Finally, cut a slit in each of the two donuts so they can be slipped around the pipe.

   e. One strip of duct tape shall be placed along the edge of the open top slit of the glove bag for reinforcement.

   f. Place the glove bag around the section of pipe to be worked on and staple the top together through the reinforcing duct tape. Staple at intervals of approximately one inch. Next, fold the stapled top flap back and tape it down with a strip of duct tape. This should provide an adequate seal along the top. (This procedure not needed if glove bags with zippers are used.) Next, duct tape the ends of the glove bags to the pipe itself, previously covered with plastic or duct tape (see step 1 above).

   g. Using the smoke tube and aspirator bulb, place the tube into the water sleeve (2-inch opening to glove bag). By squeezing the bulb, fill the bag with visible smoke. Remove the smoke tube and twist the water sleeve closed. While holding the water sleeve tightly, gently squeeze the glove bag and look for smoke leaking out, especially at the top and ends of the glove bag. If leaks are found, they shall be taped closed using duct-tape and the bag shall be re-tested.

   h. Insert the wand from the water sprayer through the water sleeve. Using duct-tape, tape the water sleeve tightly around the wand to prevent leakage.

   i. One person places their hands into the long-sleeved gloves while the second person directs the water spray at the work.

   j. If the section of pipe is covered with an aluminum jacket, this is removed first, using

the wire cutters to cut any bands and the tin snips to remove the aluminum. It is important to fold the sharp edges in to prevent cutting the bag when it is placed in the bottom. A box may be put in the bottom of the bag when the tools are placed in, and the metal placed in the box to further protect the bag from being cut.

k. With the insulation exposed, using the bone saw, cut the insulation at each end of the section to be removed. A bone saw is a serrated heavy-gauge wire with ring-type handles at each end. Throughout this process, water is sprayed on the cutting area to keep dust to a minimum.

l. Once the ends are cut, the section of insulation should be slit from end to end using the utility knife. The cut should be made along the bottom of the pipe and water continuously supplied. Again, care should be taken when using the knife not to puncture the bag. Some insulation may have wire to be clipped as well. Again, a box may be used here as in step 9 above to protect the bag from puncture.

m. Rinse all tools with water inside the bag and place back into pouch.

n. The insulation can now be lifted off the pipe and gently placed in the bottom of the bag, while the side of the insulation adjacent to the pipe is being thoroughly wetted.

o. Using the scrub brush, rags, and water, scrub and wipe down the exposed pipe.

p. Wet the donut-shaped pieces of wetable cloth over the exposed ends of the insulation remaining on the pipe.

q. Remove the water wand from the water sleeve, insert the encapsulant wand and encapsulate the entire area from which the insulation was removed.

r. Remove the encapsulant wand from the water sleeve and attach the small nozzle from the HEPA-filtered vacuum. Turn on the vacuum to collapse the bag.

s. After all the air has been removed from the glove bag, remove the vacuum nozzle, twist the water sleeve closed, and seal with duct tape.

t. From outside the bag, pull the tool pouch away from the bag. Place duct-tape over the twisted portion and cut the tool bag from the glove bag, cutting through the twisted/taped section. In this manner, the contaminated tools may be placed directly into the next glove bag without cleaning. Alternatively, the tool pouch with the tools can be placed in a bucket of water, opened underwater, and the tools cleaned and dried without releasing asbestos into the air. Rags and the scrub brush cannot be cleaned in this manner and should be discarded with the asbestos waste. If more than one adjacent section of pipe is to be removed, the glove bag may be loosened at each end and slid along the pipe to the next section. In this case, the tools would remain in the bag for continued use.

u. With removed insulation in the bottom of the bag, twist the bag several times and tape it to keep the material in the bottom during removal of the glove bag from the pipe.

v. Slip a 6-mil disposal bag over the glove bag (still attached to the pipe). Remove the tape and open the top of the glove bag and fold it down into the disposal bag.

w. All surfaces in the work area will be cleaned using disposable cloths wetted with amended water. These cloths shall be disposed of or rinsed thoroughly to eliminate visible accumulation of debris.

x. Place any contaminated articles, debris, etc., into the bag with the waste.

y. Twist the top of the bag closed, fold this over, and seal with duct-tape. Place this bag into a second 6-mil disposable bag, and seal as in the above manner. Label the bag with a warning label.

z. Asbestos-containing material shall be disposed of as specified by Massachusetts DEP.

aa. Air sampling shall be conducted after completion of glove bag projects to determine if undetected leakage occurred.

bb. Once the area has been found to be safe for re-entry by unprotected personnel, the barriers may be removed.

F. Asphalt-Based Asbestos Roofing and Flashing Material Removal

1. Operations involving the cutting or abrading of asphalt-based asbestos roofing material is considered to release sufficient friable material to constitute an asbestos abatement activity. All work using such equipment must be performed by licensed asbestos workers in a negative pressure enclosure. These restrictions may be lifted if the Contractor uses slicing equipment or manual means to remove the asbestos materials and USEPA and/or state guidance on abatement of roofing materials is followed.

2. Work Procedure

a. Perform whatever procedures are necessary including the application of wet methods and covering materials to ensure that release of asbestos materials is reduced to no visible emissions. Work using any cutting or abrading equipment must be performed in a negative pressure enclosure.

b. Remove asbestos roofing materials using tools and equipment specified in regulatory guidance documents.

c. Continuously mist the work area as asbestos roofing materials are being removed from the structure.

d. All asbestos roofing materials must be removed intact.

e. All loose debris shall be immediately collected via HEPA vacuum or wet wipe. The vacuum debris and wipe materials shall be segregated and disposed as asbestos-contaminated waste.

f. Wet methods shall be used whenever operations call for the scraping of resilient roofing materials or mastic.

g. Where cutting and abrading is prohibited, a negative pressure enclosure is not

required. Waste must be lowered by a crane, hoist, or dust-tight chute, in accordance with applicable regulations.

G. Electrical Wiring Insulation Removal Procedures

1. The Contractor shall retain a licensed and qualified electrician to verify that ACM electrical wiring to be removed has been de-energized and is safe to be removed by abatement workers. If wiring to be removed is energized, the Contractor shall retain an electrician to de-energize the specified wiring.

2. The Abatement Contractor shall remove all specified electrical wiring insulation from the Site buildings in accordance with all Federal and Massachusetts regulations, codes and policies pertaining to asbestos abatement. The removal of the electrical wiring insulation shall be conducted upon completion of de-energizing and lock-out / tag-out by the Contractor's electrician. The Contractor shall perform demolition to access (as necessary) electrical wiring insulation for abatement. The Abatement Contractor shall seal a glove bag around the conduit and wiring insulation and carefully cut the conduit and wiring into manageable sections. This procedure shall be conducted in accordance with OSHA glove bag techniques. The manageable sections of conduit and electrical wiring insulation abated inside a full-containment work area. Prior to transporting the conduit to the containment area for abatement, the Contractor shall seal the ends of the conduit with polyethylene sheeting and seal with duct tape. Metal conduit and wiring shall be decontaminated and recycled.

H. Encapsulation Procedures

1. The polyethylene barriers shall be cleaned of gross contamination before a lockdown sealant can be applied to the substrate.

2. After the substrate has been cleaned and all polyethylene barriers of the work area are cleaned of all visible debris, the Contractor shall request a visual inspection of the work area by the Consultant.

3. Workers performing lockdown must wear disposable protective clothing and respirators suitable for asbestos. The encapsulation process shall not be treated any differently from the removal process in this respect.

4. All surfaces from which asbestos-containing materials have been removed shall be encapsulated. A minimum of one coat of lockdown encapsulant will be applied to both the substrate and the polyethylene sheeting serving as the containment barrier. If the lockdown material is being applied to irregular, grooved, or corrugated surfaces, it shall be administered from the opposing side, or at a right angle to the direction of the previous application.

5. The encapsulant shall be left to dry before the commencement of final air testing. After final clearance and inspection criteria have been met (See Section 4.1 regarding Final Clearances), the Contractor shall begin final take-down procedures.

I. Removal Of Critical Barriers

1. No critical barrier shall be taken down until the final visual inspection and final clearance air tests are found to be below 0.010 fibers/cc by PCM.

2. After a successful final visual inspection, encapsulation, and a successful final air test, the Contractor shall conduct the post abatement takedown.

3. All encapsulated polyethylene sheeting used in the construction of the Decontamination Unit and Containment Area shall be bagged and disposed of as asbestos contaminated waste.

4. Areas exposed during this process shall be examined for traces of suspect material.

5. If any is found, it will be picked up by HEPA vacuuming and wet cleaning, and a coat of encapsulant shall be applied to the affected areas. Based on the amount of suspect material found, the Consultant may request the use of misters in the surrounding area.

6. The Contractor will then implement the use of misters as a precautionary measure.

3.03 DISPOSAL OF ASBESTOS WASTE

A. All waste removal procedures shall be conducted in accordance with local, state and federal regulations.

B. The Contractor shall provide proof that disposal sites for all waste materials have current and valid permits to accept specific wastes at the time of the pre-construction meeting.

C. Receipts shall be obtained by the Contractor from the disposal/recycling site(s), and submitted to the Consultant upon request for final payment.

D. Warning labels having permanent, waterproof print and adhesive shall be affixed to all asbestos bags, trucks, drums (lids and sides), and other containers used to store and/or transport asbestos-containing material. Labels must be conspicuous and legible and contain the following warning:

CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

E. The Contractor shall be responsible for all necessary precautions to prevent pollution by spilling during the performance of services and shall assume full responsibility for all Contractor caused spills, which shall be cleaned up at the Contractor's expense.

F. Temporary storage of asbestos waste on-site (inside) will be allowed in designated non-work areas only.

3.04 SCRAP METALS REMOVAL

A. Precious, semi-precious, and scrap metals, including, but not limited to, copper, aluminum, silver, gold, brass, and steel shall not be cut and removed from the Site by the Abatement Contractor unless specifically required by the Asbestos Abatement provisions of these specifications and by written authorization from the Owner and the Demolition Contractor.

3.05 HOUSEKEEPING

A. Throughout the work period, the Contractor shall maintain the building and site in a standard of cleanliness as specified throughout these specifications.

1. Contaminated disposable clothing, respirator filters, and other debris shall be bagged and sealed at the end of each workday.

2. All asbestos generated by either removal or repair shall be bagged immediately and not be allowed to be left exposed at the end of each workday.

3. Respirators shall be thoroughly cleaned at the end of each workday and stored for the next days use.

4. The Contractor shall retain all stored items in an orderly arrangement allowing maximum access, not impeding traffic, and providing the required protection materials.

5. The Contractor shall not allow the accumulation of scrap, debris, waste material, and other items not required for completion of the work.

6. The Contractor shall provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.
7. Daily, and more often if necessary, the Contractor shall inspect the work areas and adjoining spaces, and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.

8. The Contractor shall maintain the site in a neat and orderly condition at all times.

3.06 QUALITY CONTROL

A. The Owner has retained the Consultant, to provide project administration, monitoring of Contractor work practices and performance, inspection of the work sites, bulk fiber identification, and air sampling and analysis throughout the asbestos and hazardous materials abatement project.

B. Many references to Owner will in fact be managed by the Consultant in lieu of the Owner, at the Owner's request, and the Contractor is required to regard the requests and interpretations of the Consultant as having full force unless expressly informed otherwise by the Owner.

C. Air Monitoring

1. The air clearance acceptance criteria for this project is <0.010 fibers per cubic centimeter of air (f/cc) by Phase Contrast Microscopy (PCM) using the NIOSH 7400 Method.

2. Background (pre-testing) air and appropriate dust samples may be taken to represent conditions before the Contractor starts masking and sealing operations.

3. During removal, area samples will be collected by the Consultant outside major openings in the containment: in the clean room, at other critical points outside the work areas, just outside the clean room, inside the contained work sites, and at HEPA exhaust locations.

The Contractor shall be responsible for all OSHA personal sampling. Final clearance air samples will be collected inside each removal area after acceptance of visual inspection and encapsulation.

4. NOTE: Encapsulation on all surfaces (including floor) must be dry prior to final air sampling.

5. A sufficient number of samples to reliably characterize the work place air quality will be taken. Air will be agitated by means of a small leaf blower prior to the test, and kept agitated by means of a small electric fan. The results of all samples must comply with the regulations set forth in this specification. Failure to meet the specified criteria will require the Contractor to reclean the designated work site and then the Consultant to repeat the final air clearance testing. All repeat air testing shall be the Contractor's financial responsibility. Cleaning and testing will be repeated until the specified criteria are met.

D. Work Review

1. The Consultant will review the Contractor's work practices prior to the start of, and during all asbestos related work, and will report any specification violations to the Contractor. If the Contractor fails to correct deficiencies in a timely manner, the Contractor will be notified in writing, and work may be stopped.

2. The Consultant will review the containment structure and negative air conditions before work begins and after the Contractor Site Supervisor has given approval. Outside containment airborne fiber concentrations must not exceed 0.010 fibers/cc or pre-abatement levels, whichever is greater.

3. If concentrations exceed this level, then work must be stopped, conditions reviewed as to the probable cause, and then corrected. A description of procedures regarding fiber concentrations greater than 0.010 fibers/cc outside the containment can be found above.

4. The Consultant may keep a daily log of the Contractor's work practices and will make these daily logs a part of the final project documents.

3.07 PERSONAL PROTECTION

A. Respirators and Protective Clothing

1. Protective Clothing

a. Personal protection, in the form of disposable Tyvek suits, and NIOSH approved respirators, are required for mechanics, Contractor supervision, Owner, Consultant, and visitors at the work site during the set-up, removal, and cleaning operations.

b. The Contractor shall provide all this protective equipment for workers, Owner, Consultant, and authorized personnel to access this work site.

c. Each worker shall be supplied with a minimum of two complete disposable uniforms every day.

d. Removal workers shall not be limited to two uniforms, and the Contractor will be

required to supply additional uniforms as is necessary. Under no circumstances will anyone entering the removal area be allowed to reuse a contaminated uniform.

e. Work clothes shall consist of disposable full body suits, head covers, gloves, footwear, and eye protection. Street clothes are forbidden in the work area at all times, even under protective suits.

2. Respiratory Protection

a. The Contractor shall supply workers and supervisory personnel with NIOSH approved protective respirators and HEPA filters.

b. Appropriate respirator selection shall be determined by the daily personal samples being taken and strictly follow the guidelines set forth in the OSHA respiratory program 29 CFR 1910.134 and applicable Connecticut DPH regulations. The respirators shall be sanitized and maintained according to the manufacturer's specifications. Appropriate respirators shall be selected using the information provided in OSHA Title 29 CFR Part 1910.1926 Final Rules. This determination has been made for this project. The Contractor shall utilize full-face Powered-air Purifying (PAPR) respirators equipped with HEPA filters for all work. Disposable respirators shall not be considered acceptable in any circumstance.

c. The Contractor will maintain on site a sufficient supply of disposable HEPA filters to allow workers and supervisory personnel to change contaminated filters at least three (3) times daily. The Contractor is solely responsible for means and methods used and for compliance with applicable regulations.

d. Respirators shall be individually assigned to removal workers for their exclusive use.

e. All respiratory protection shall be provided to workers in accordance with the written submitted respiratory protection program, which includes all items in OSHA 29 CFR 1910.134 (b) (1-11). A copy of this program shall be kept at the work site, and shall be posted in the Clean Room of the Decontamination Unit.

f. Workers must perform negative and positive pressure fit tests each a time a respirator is put on, whenever the respirator design permits.

g. Workers shall be given a qualitative fit test in accordance with procedures detailed in the OSHA 29 CFR 1910.1025, Appendix D, Qualitative Fit Test Protocols, for all respirators to be used on this abatement project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.

h. Upon leaving the active work area, the pre-filter shall be discarded, cartridges removed, and respirators cleaned in disinfectant solution and clean water rinse. Clean respirators shall be stored in plastic bags when not in use. The Contractor shall inspect respirators daily for broken, missing, or damaged parts.

3. Personal Sampling

a. The Contractor shall provide daily personal sampling to check personal asbestos

exposure levels for the purpose of establishing respiratory protection needs.

b. Samples shall be taken for the duration of the work shift or for eight hours, which ever is less.

c. Personal samples need not be taken every day after the first day if working conditions remain consistent, but must be taken every time there is a change in the removal operation, either in terms of the location or the type of work, or during any changes in personnel. Sampling will be to determine eight-hour Time Weighted Averages (TWA). The Contractor is responsible for personal sampling as outlined in OSHA Standard 1926.1101.

d. Sampling personnel shall be proficient in the taking of asbestos air samples as prescribed by NIOSH 7400, and must be supervised by an individual who has completed the NIOSH 582, or equivalent, training course.

e. Asbestos air sampling results shall be available for posting at the job site in written form no more than twenty-four (24) hours after the completion of a sampling cycle. The document shall list each sample's result, sampling time and date, individual monitored, flow rate, sampling duration, microscope field area, number of fibers per fields counted, cassette size, and analyst's name and company. Air sample analysis results will be reported in fibers per cubic centimeter.

END OF SECTION

BUILDING DEMOLITION SPECIFICATIONS

11 Hope St., East Lyme, CT
Table 1
Asbestos-Containing Material Inventory

Asbestos-Containing Material	Location	Approximate Quantity
Green Patterned Linoleum	2nd Floor – Kitchen	250 SF
Furnace Insulation	1st Floor	1 Furnace ~3'x 3'x 3'
Light Fixture Paper	2nd Floor Bedroom	1 Fixture ~1SF
Chimney Flashing	Roof	5 SF
Joint Compound and Associated Sheetrock	2nd Floor	1,000 SF
Chimney Flue Cement	1st Floor	2 SF

*LF= Linear Feet SF= Square Feet

BUILDING DEMOLITION SPECIFICATIONS

SECTION 02082

HAZARDOUS MATERIALS ABATEMENT

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all sections within DIVISION 1 – GENERAL REQUIREMENTS that are hereby made a part of this Section. Note also all Addenda.

1.02 RELATED REQUIREMENTS

A. Examine all Drawings, the DESCRIPTION OF WORK, and all other Sections of the Specifications for requirements affecting the work of this Section whether or not such work is specifically mentioned in this Section.

B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

C. The following items are closely related to this work but not included in this Section, and will be performed under the designated Sections.

1. Section 02051 – Asbestos Abatement
2. Section 13282 – Lead-Based Coatings Removal

1.03 DESCRIPTION OF WORK

A. The Hazardous Materials Abatement Contractor (Contractor) shall furnish all labor, materials, equipment, and services for the removal and disposal of specified PCB/DEHP ballasts, mercury tubes/bulbs in fluorescent and high intensity discharge lights, miscellaneous electronic equipment, paint containers and household chemicals from the Site. An inventory with the location and estimated quantities of materials is provided in the attached Table #3.

B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

C. The Contractor is required to verify the quantities of materials prior to the bid deadline. The estimation shall be performed prior to the submission of the bid. If further investigation time is required for the quantity verification, arrangements shall be made as needed. Bidders shall inform the Owner and the Consultant of any discrepancies between the quantities and types of materials specified herein and those verified to be present by the Bidder. If appropriate, an adjustment shall be made as to the types and/or quantities to be included in the Bid. If no discrepancies with the types and/or quantities of materials to be abated are brought to the attention of the Consultant prior to the Bid due date, it will be understood that the Bidders are in agreement with the types and quantities of materials specified herein, and no change orders will be allowed for these materials if quantity discrepancies are identified after bids are received.

D. All work including the removal, characterization (any testing that may be required by disposal facilities) and disposal of hazardous materials.

E. Removal, characterization (any testing that may be required by disposal facilities) and disposal of all specified materials.

F. File all necessary notices, obtain all permits and licenses, and pay all governmental taxes, fees, and other costs in connection with the work. Obtain all necessary approvals of all governmental agencies having jurisdiction.

G. Comply with provisions within these Specifications, all federal, state and local regulations, codes and standards having jurisdiction, and Contractor's Health and Safety Plan.

H. The Contractor is responsible for conducting all OSHA related safety and structural investigations for general building and roofing conditions within the building that could pose a hazard to their workers. The Contractor shall include in their base bid all costs for performing these investigations and corrective measures required to abate any unsafe conditions and protect workers during abatement activities.

1.04 LOCATION OF WORK

A. Locations of work areas, descriptions, and estimated types and quantities of hazardous materials are described in the attached Table 3. If additional hazardous materials are encountered, Contractor shall notify the Owner and the Consultant immediately and be prepared to abate the material.

B. Handling and disposal of all items identified in the attached Table 3 are to be included in the appropriate bid items of the contract.

1.05 REFERENCES

A. The Contractor is advised to thoroughly review the documents referenced in this Section. Strict adherence to the hazardous materials, noise, air, and water pollution regulations and requirements is required.

1. Code of Federal Regulations

a. 29 CFR 1910, "Occupational Safety and Health Standards" (General Industry Standards)

b. 29 CFR 1910.20, "Access to Employee Exposure and Medical Records"

c. 29 CFR 1910.134, "Respiratory Protection"

d. 29 CFR 1910.1200, "Hazard Communication"

e. 29 CFR 1926, "Safety and Health Regulations for Construction" (Construction Industry Standards)

f. 29 CFR 1926.62, "Lead in Construction"

g. 29 CFR 1926.120 "Hazardous Waste Operations and Emergency Response"

h. 40 CFR 50, "National Primary and Secondary Ambient Air Quality Standards"

i. 40 CFR 60, "Standards of Performance for New Stationary Sources", Appendix B, "Test Methods"

j. 40 CFR 117, "Determination of Reportable Quantities for Hazardous Substances"

k. 40 CFR 172, "Hazardous Waste Transportation"

l. 40 CFR 261, "Identification and Listing of Hazardous Waste"

m. 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste"

n. 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"

o. 40 CFR 268, "Land Disposal Restrictions"

p. 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan"

q. 40 CFR 302, "Designation, Reportable Quantities, and Notification"

r. 10 CFR 761 "Toxic Substances Control Act (TSCA)"

2. Occupational Safety and Health Administration OSHA, Booklet 3126 "Working with Lead in the Construction Industry"

3. National Institute for Occupational Health and Safety, NIOSH Method 7082, "Lead"

4. American Society for Testing and Materials, ASTM D3335, "Test Method for Low Concentration for Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy"

5. United States Environmental Protection Agency (EPA) Publications

   a. SW-846, "test Methods for Evaluating Solid Waste – Physical/Chemical Methods"

   b. EPA Method 3050, "Acid Digestion of Sediments, Sludges, and Soils"

6. Commonwealth of Connecticut Waste Disposal Regulations

7. Any and all applicable Local, City, or County Bylaws, Codes and Regulations

1.06 SUBMITTALS

A. Before work is allowed to begin, the Contractor shall submit the following to the Owner and Consultant for approval:

BUILDING DEMOLITION SPECIFICATIONS

1. Copies of all notifications, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion.

2. Site-specific Hazardous Waste Handling Plan.

3. Copies of all supervisor and worker certifications associated with OSHA 40 Hour Hazardous Waste Site Health and Safety Training in accordance with 29 CFR 1910.120.

4. A proposed timetable for the complete job that shows the preparation, removal and disposal, clean up, testing, and teardown portions of the job for each work area. A critical path showing completion dates for each area shall be included.

5. Written site-specific Respiratory Protection Program for employees throughout all phases of the job, including make, model and NIOSH approval numbers of respirators to be used on this specific job.

6. Proof that supervisors and workers who may need to use respiratory protection have been fit-tested within the past twelve months for using both a negative-pressure respirator equipped with HEPA filter cartridges and a PAPR.

7. Proof that supervisors and workers have been examined by a qualified physician within the past 12 months, and are capable of wearing respiratory protection and are able to perform hazardous materials abatement work and other related activities.

8. Proposed electrical safeguards to be implemented, including but not limited to location of transformers, GFCI outlets, lighting, and power panels necessary to safely perform the job, including a description of electrical hazards safety plan for common practices in the work area.

9. A list of all equipment to be used on site, by make and model, including ventilation equipment, HEPA vacuums, etc.

10. Chain of Command of responsibility at work site including supervisors, foreman, and competent person, their names, and resumes.

11. Proposed Emergency Plan and route of egress from work areas in case of fire or injury, including the name, directions/map and phone number of nearest medical assistance center.

12. An MSDS or equivalent, in accordance with the OSHA Hazard Communication Standard (29CFR 1910.1200) for all products and materials proposed for use on the project. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated. A copy of the Contractor's complete OSHA Hazard Communication Standard will also be submitted and be kept on site at all times describing the Contractor's Hazardous Materials HazCom Program.

13. Any other documentation that applies and is called for by this or other sections of the specifications.

14. No work on the project will be allowed to begin until Owner and Consultant as listed herein approve the Pre-Job Submittals. Any delay caused by the Contractor's refusal to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

15. Firm(s) shall be qualified to perform hazardous materials abatement operations as described herein and shall have sufficient workers and supervisors who have successfully completed the OSHA Hazardous Waste Operations 40 Hour Training in compliance with 29 CFR 1910.120, 8 hours annual refresher training, annual medical monitoring by an occupational physician, and 24 hours "on the job" training. Submit copies of updated training certificates of all workers and supervisors to be used on this project.

16. Firm(s) shall specify and submit qualification information as described herein for an on-site Supervisor who is fully qualified in all aspects of hazardous materials abatement practices and procedures, and have, in addition to the training specified in paragraph b. above, a minimum of one year experience working with hazardous materials of this nature, 8 hours training in managing hazardous waste operations, and current certification in first aid and cardio pulmonary resuscitation (CPR) by a recognized approved organization. Submit list of comparable projects that involve this type of work.

17. Copies of appropriate medical monitoring results as required by 29 CFR 1910.120 or a notarized statement by the examining medical doctor that such examinations took place according to 29 CFR 1910.120 and when, for each employee to be used on project.

18. Name, address, and ID number of the hazardous waste hauler(s), waste transfer route(s), and proposed disposal (incineration/recycling) site(s).

19. Contractor's written site-specific Health and Safety Plan that includes HazCom, Respiratory Protection, Lockout/Tagout and Confined Space Entry Programs with site-specific written plans.

B. Upon completion of the hazardous materials abatement work, the Contractor shall submit the following to the Consultant for approval:

1. Copies of manifests, bills of lading and receipts acknowledging disposal of all hazardous waste materials, drums, tanks transformers, etc., from the project, showing delivery date, quantity, and appropriate signature of disposal/recycling/incineration sites' authorized representative.

C. Permits

The Contractor shall be responsible for securing and paying for all necessary permits for hazardous materials related work, including hauling, removal and disposal, building, fire, tank permits, and materials usage, Police and Fire details, or any other permits required to perform the specified work.

D. Fees, Licenses, Patents, and Copyrights

1. The Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or process in the performance of the job specified herein. The Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights.

2. The Contractor shall hold the Owner and the Consultant harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights.

3. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing fee or royalty fee for use in the performance of the job, the Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such rights.

4. The Contractor shall be responsible for costs of all licensing requirements, where applicable, and notification requirements and all other fees related to the Contractor's ability to perform the work in this section.

1.07 SAFETY CONSIDERATIONS

A. This project is subject to compliance with Public Law 91-596, "Occupational Safety and Health Act of 1970" (OSHA), with respect to all Rules and Regulations pertaining to construction, including Volume 36, Numbers 75 and 105, of the Federal Register, as amended, and as published by the U.S. Department of Labor.

B. In addition to any detailed requirements of the Specification, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storage of hazardous waste materials.

C. All staging and scaffolding (if needed) shall be furnished and erected by the Contractor in accordance with all applicable requirements, and be maintained in safe condition by him at no additional cost to the Owner.

D. The Contractor is responsible for using safe procedures to avoid electrical hazards. When a hazard exists, work will be stopped and power will be shut off and checked before work begins again. All electrical panels and exposed wires within the work site shall be de-energized prior to the commencement of any wetting or removal operations. All extension cords and power tools used within the work area shall be attached to Ground Fault Circuit Interrupters (G.F.C.I.) in accordance with 1910.120 and the Contractor's Lockout/Tagout and Confined Space Entry programs.

1.08 SECURITY

A. The Owner will provide specific access as required during the project to the Contractor and personnel assigned to the project. The access shall be determined by the Owner. The Contractor will be responsible for the security of the building areas involved in the abatement

project. The Contractor shall maintain security in the building using appropriate secure barriers and locks. It will also be the Contractor's responsibility to allow only authorized personnel into each work area, and to secure all assigned entrances and exits at the end of the workday. Authorized personnel include licensed Contractor staff, the Consultant, and all other personnel with the appropriate training, medical approval, respirator fit testing, and personal protective equipment.

B. Any person entering or leaving the contained areas must sign the Contractor's bound logbook and enter the date and time. The logbook must be located immediately outside the entrance to the work area at all times, and be open for inspection by the Consultant.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

The Contractor shall provide new materials and new or used equipment in undamaged and serviceable condition. Only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards, are to be used during the project.

A. Fire Extinguishers

The Contractor shall provide multi-purpose ABC minimum rating to A40BC fire extinguishers. The Contractor shall comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers." Fire extinguishers shall be located where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher inside each work area and one outside each work area.

B. Construction Lumber

Construction lumber shall consist of nominal, fire-retardant, 2" x 4" framing, sixteen inches center to center.

C. Plastic Sheeting

The Contractor shall provide non-combustible, fire-retardant, 6-mil thick clear, frosted, or black plastic sheeting in the largest size possible to minimize seams. Spray plastic will not be allowed for use on this project.

D. Adhesive Materials

The Contractor shall provide duct tape in 2" or 3" widths, with an adhesive that is formulated to aggressively stick to plastic sheeting. The Contractor may also provide spray adhesive in aerosol cans that is specifically formulated to stick tenaciously to plastic sheeting.

E. Electrical Service

1. The Contractor shall provide temporary power service with minimum 60 amp, 2 pole circuit breaker or fused disconnect connected to the auxiliary power source. The sub panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work. The Contractor shall comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electric service.

2. The Contractor shall provide identification-warning signs of voltage differences at power outlets that are other than 110-120 volt power and provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

3. The Contractor shall provide receptacle outlets equipped with ground-fault circuit interrupters (GFCI), with reset button and pilot light, for plug-in connection of power tools and equipment. No electrically powered tools or equipment shall be operated without a Ground-Fault Interrupter. The Contractor shall provide the Consultant with documentation proving that the GFCI's are in proper working order.

4. The Contractor shall use only grounded extension cords. Use "hard-service" cords where exposed to abrasion and traffic. Single lengths of electric cord shall be used or waterproof connectors shall be used to connect separate lengths of electric cords, if single lengths will not reach areas of work.

5. The Contractor shall provide general service incandescent lamps of wattage required for adequate illumination (in accordance with OSHA 29 CFR 1910.56, "Illumination"). Lamps shall be equipped with guard cages or tempered glass enclosures where fixtures are exposed to breakage by construction operations. Exterior fixtures shall be provided where fixtures are exposed to the weather or moisture.

F. Protective Equipment

The Contractor shall provide health and safety equipment required to protect workers and to comply with the Health and Safety Plan.

G. Drums

The Contractor shall provide DOT approved drums or containers for the disposal of specified materials.

BUILDING DEMOLITION SPECIFICATIONS

PART 3 - PROJECT EXECUTION

3.01 GENERAL CONSIDERATIONS

A. Approvals And Inspection

All temporary facilities, work procedures, equipment, materials, services, and agreements must strictly adhere to and meet these contract specifications along with EPA, OSHA, and NIOSH regulations and recommendations as well as any other federal, state, and local regulations. Where there exists overlap of these regulations, the most stringent one applies. All work performed by the Contractor is further subject to approval of the Consultant. Modifications to these procedures and design may be considered if all elements of proper and safe procedures to prevent contamination and exposure can be demonstrated. Written modifications to these specifications must be made to the Consultant for review before they can be used for work on this project.

B. Damage And Repairs To The Work Site

Abatement and disposal shall be performed without damage to the building, including, but not limited to, structural members, ceilings, walls, pipes, duct work, light fixtures, etc, except where specified under demolition. The Contractor shall provide protection of these items and materials as part of the work. The Contractor shall not perform any demolition activity that could result in the loss of integrity of any building or equipment-related structural member. Where abatement activity causes damage, the Contractor shall patch, repair, replace or otherwise restore same to its original condition at no additional cost to the Owner. Refer to Division 1 General Specifications.

The Contractor shall ensure that electrical power is not interrupted to the site groundwater treatment system. This system must be operated 24 hours per day for the duration of the project. The Contractor shall ensure that electrical power remains active in all other areas identified by the Owner and the Owner's electrician.

C. HVAC Systems

Wherever possible, shut down and lock out electric power to all work areas. Provide temporary power and lighting according to these specifications. Coordinate with the Consultant in advance prior to conducting shutdowns and lockouts. Whenever the work area cannot be completely de-energized, the Contractor will provide the Consultant with a plan for protecting workers and electrical equipment. Shut down and lock out all heating, cooling, and air conditioning system (HVAC) components that are within, supply, or pass through the work area. This will be done with the advice and counsel of the Consultant, but the Contractor is responsible to ensure all systems are shut down and it is impossible to re-energize until clearance is obtained. Investigate the work area and agree on pre-abatement condition with the Owner.

D. Barriers And Isolation Areas

1. The Contractor shall construct and maintain suitable critical barriers within the building to separate work areas from spaces occupied by the Owner. Critical barriers shall be

of sufficient size and strength to prevent building occupants, the public, and others from entering the work areas.

2. The Contractor shall maintain all temporary and critical barriers, facilities and controls as long as necessary for the safe and proper completion of the work.

3.02 SPECIFIC CONSIDERATIONS

A. Light Ballasts

1. All fluorescent lighting and mercury light tubes throughout the building shall be removed and properly disposed by the Contractor

2. Ballasts shall be removed utilizing chemically resistant gloves, as exterior surfaces may contain trace quantities of PCB's, in accordance with all Federal, State, and Local laws and regulations.

3. If a leaking ballast or visibly contaminated light fixture component, or other PCB equipment is detected during removal, workers shall immediately don chemically resistant protective suits, i.e., one made of Tyvek, to reduce skin contact with PCB's.

4. All protective equipment (gloves, suits) and materials contaminated during any cleanup shall be disposed of as PCB contaminated waste along with the ballasts and fixtures.

5. All ballasts, contaminated fixture components, and other PCB contaminated items shall be placed in double 6-mil thick polyethylene bags immediately upon removal. Bags will be labeled with the following yellow PCB caution label:

CAUTION
CONTAINS

PCB's
(Polychlorinated Biphenyls)

A toxic environment contaminant
requiring special handling and
disposal in accordance with U.S.
Environmental Protection Agency
Regulations 40 CFR 761 - For
Disposal Information contact the
nearest U.S. EPA Office.

In case of accident or spill, call toll
free the U.S. Coast Guard National
Response Center:
800-424-8802

Also Contact_____
Tel. No._____

6. After labeling, place bags immediately into prepared, labeled 55-gallon steel drums or other Department of Transportation (DOT) approved containers. Drums shall be labeled with the same label depicted above. Separate ballasts, fixture components, and other equipment into separate drums. Leaking ballasts shall be kept separate from all other items.

7. Use new 17C 55-gallon open head steel drums that have been approved for transporting hazardous materials. Used or reconditioned drums may be used only if they have been properly cleaned, tested, and labeled.

8. Drums shall be prepared by placing one to three inches of absorbent material in the bottom (i.e., speedy-dry, sawdust, or kitty litter).

9. Drums shall be packed so as not to exceed a total weight of 900 pounds. If proper handling equipment is not available, half fill the drums so that manual handling is possible.

10. Remove, characterize and legally dispose at an appropriate off-site PCB recycling/disposal facility all PCB and non-PCB fluid-containing light ballasts throughout the buildings. For bidding purposes, Bidders shall assume that all fluid-containing ballasts contain PCBs.

11. Document all disposal, incineration and recycling activities to ensure compliance with regulations.

B. Mercury Tubing & Thermostat Removal

1. Mercury Tubing and Bulbs shall be removed from each fluorescent light fixture safely. At no time, shall the tubes or bulbs be broken or crushed.

2. Bulbs shall be packed into cardboard boxes, or other approved containers, of sufficient size to safely transport them.

3. Mercury thermometers, thermostats and switches shall be removed from thermostats and other mercury controls without breakage and packed into leak-tight containers to safely transport them.

4. Provide all waste shipment and recycling records and incorporate them into the final waste disposal documentation report.

C. Refrigerants

1. Collect and analyze refrigerant samples, as necessary, to identify system gases from all refrigerant-containing vessels and systems. These systems include wall-mounted air conditioning units.

2. Evacuate all refrigerant-containing vessels and systems using a vacuum pump. Furnish and install all necessary generators, valves, and fittings required to capture and collect the refrigerants in DOT-approved recovery cylinders, tanks or drums. Properly label all recovery cylinders, tanks and drums.

3. All activities associated with the removal and reclamation of refrigerant gases shall be in accordance with Section 608 of the Federal Clean Air Acts Amendment of 1991.

4. After removal of all refrigerants; water fountains shall be disposed of in accordance with applicable regulations. Certificates of reclamation/recycling shall be submitted to the Owner and Consultant.

D. Equipment Fluids and Physical Plant Systems Fluids

1. Drain hydraulic fluid or remove reservoir from hydraulic door stops.

2. Collect, characterize, and drum all fluids/reservoirs by compatible classification (i.e., PCBs, antifreeze, etc.), including decontamination fluids from the above described equipment and piping.

3. Label drums for transport and disposal.

4. After removal of all hazardous components, dispose of remaining equipment carcasses and piping in accordance with applicable regulations. Contractor shall submit documentation verifying testing, removal, transportation, and disposal at the approved disposal facilities.

E. Hazardous Materials/Wastes

1. All hazardous materials shall be characterized and disposed of in accordance with applicable State and Federal regulations. Disposal manifests shall be provided for all waste disposal streams generated.

2. Workers who handle hazardous materials shall be licensed and trained in safe and proper hazardous materials handling procedures. At a minimum, this shall include OSHA 40 Hour Hazardous Waste Site Health and Safety Training in accordance with 29 CFR 1910.120.

3. Any hazardous materials containers in poor condition shall be properly containerized, labeled and removed as soon as possible.

4. Place waste in DOT approved containers and label the containers for transport to a licensed disposal site.

5. Use an authorized hazardous waste transporter to haul waste to a hazardous waste facility.

6. Follow all record-keeping, chain-of-custody, and reporting requirements, including a copy of the hazardous waste manifest.

7. Accurately measure and weigh the contents of each container or shipment of waste removed from the site. Submit records of waste quantities to Owner and Consultant.

8. Special attention shall be given to the time of storage, amount of material stored at any one time, use of proper containers, and personnel training.

9. Provide appropriate notifications to regulatory agencies if there is a release to the environment exceeding the CERCLA reporting requirements.

10. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.

11. Provide legal transportation of the waste to the disposal site, and complete or obtain all required licenses, manifests, landfill slips, or other forms. Copies of all forms or licenses, and the signed originals of the Waste Manifests for each waste shipment shall be given to the Consultant or Owner.

3.03 DISPOSAL OF MERCURY, HAZARDOUS MATERIALS & PCB WASTE

A. All waste removal procedures shall be conducted in accordance with local, state and federal regulations.

B. The Contractor shall provide proof that disposal sites for all waste materials have current and valid permits to accept specific wastes at the time of the pre-construction meeting.

C. Receipts shall be obtained by the Contractor from the disposal/recycling site(s), and submitted to the Consultant upon request for final payment.

D. The Contractor shall be responsible for all necessary precautions to prevent pollution by spilling during the performance of services and shall assume full responsibility for all Contractor caused spills, which shall be cleaned up at the Contractor's expense.

E. All PCB drums and bulk items shall contain a material profile which includes the name, address and telephone number of the waste generator; the date on which the materials were removed; a description of the material, i.e., discarded light ballasts; and the new DOT Shipping Description, (RQ, Polychlorinated Biphenyls, 9, UN2316, PGII).

F. Provide a Connecticut DEP Hazardous Waste Manifest and/or the federal Uniform Hazardous Waste Manifest, as appropriate, with each shipment.

G. Drums and bulk items shall be transported by a Connecticut licensed hazardous waste hauler, unless leaking ballasts are involved, in which case a registered PCB hauler shall be utilized.

H. Drums and bulk items shall be transported from the work site immediately upon completion of removal and packing. No materials are to be stored at the site.

I. Ballasts and contaminated light fixture components shall be disposed at an approved Recycling/Incineration facility and/or in accordance with any waste hauler special

requirements. CT DEP regulations prohibit disposal at landfills.

J. Dispose of all mechanical equipment and any PCB-contaminated concrete debris generated in accordance with U.S. EPA, CT DEP and waste hauler requirements.

K. Bulbs shall be transported and disposed of at an approved Recycling facility in accordance with any waste hauler special requirements. CT DEP regulations prohibit disposal at landfill.

3.04 QUALITY CONTROL

A. The Owner has retained the Consultant, to provide project administration, monitoring of Contractor work practices and performance, and inspection of the work areas throughout the hazardous materials abatement project.

B. Many references to Owner will in fact be managed by the Consultant in lieu of the Owner, at the Owner's request, and the Contractor is required to regard the requests and interpretations of the Consultant as having full force unless expressly informed otherwise by the Owner.

C. Work Review

1. The Consultant will review the Contractor's work practices prior to the start of, and during all hazardous materials related work, and will report any specification violations to the Contractor. If the Contractor fails to correct deficiencies in a timely manner, the Consultant will be notified in writing, and work may be stopped.

2. The Consultant will keep a daily log of the Contractor's work practices and will make these daily logs a part of the final project documents.

END OF SECTION

11 Hope St., East Lyme, CT
Table 3
Hazardous Materials Inventory

	Material Description	Material Location	Potential Hazard	Estimated Quantity	
*	~~Microwave~~	~~2nd Floor – Kitchen~~	~~Electrical Components~~	~~1~~	~~Unit~~
*	~~Computer Monitor~~	~~2nd Floor – Kitchen~~	~~Cathode Ray Tube~~	~~1~~	~~Unit~~
*	~~One gallon paint container~~	~~2nd Floor – Bathroom~~	~~Chemical~~	~~2~~	~~Units~~
*	~~One gallon Muriatic Acid (HCl) container~~	~~2nd Floor – Bathroom~~	~~Chemical~~	~~3~~	~~Units~~
*	~~One quart paint container~~	~~2nd Floor – Bathroom~~	~~Chemical~~	~~2~~	~~Units~~
	Fluorescent Light Ballast	Throughout	PCB/DEHPH	15	Units
	Fluorescent Light Bulbs – 2' and 4' length	Throughout	Mercury	40	Bulbs

* REMOVED AS OF 6-20-11

BUILDING DEMOLITION SPECIFICATIONS

SECTION 13282

LEAD-BASED COATINGS REMOVAL

PART 1 - GENERAL:

1.01 DESCRIPTION:

A. This Section specifies demolition of structures involving lead paint. Work practices and procedures described herein apply to any task the Contractor believes may cause lead exposure to workers in excess of the permissible exposure limit (PEL) including but not limited to:
- manual demolition of structures, manual scraping, manual sanding, and use of heat guns where lead-containing coatings or paints are present;
- abrasive blasting enclosure movement and removal;
- power tool cleaning;
- lead burning;
- abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;
- clean-up activities where dry expendable abrasive are used

B. Documents affecting work of this Section include, but are necessarily limited to, General Conditions and Supplementary Conditions

C. Examine all Drawings and all other Sections of the Specifications for requirements of related sections affecting the work of this Section. A lead determination of the Site buildings indicates that various painted components are considered to be lead-containing.

D. The work of this section shall be performed as stated herein. In performing the work of this section, the Contractor shall refer to other Sections for additional procedures. The Contractor is responsible for the coordination of the work of this section with related work. No delays in completion of the work may be claimed for lack of coordination.

E. Contractor shall comply with all applicable local, state, and federal guidelines and regulations regarding all work involving the presence of lead-containing paint.

F. The work of this section references work of the Contractor performing the demolition. Additionally, requirements of the General Contractor regarding coordination and related work are identified in this section and shall be considered the responsibility of the General Contractor.

1.02 DESCRIPTION OF WORK:

A. The work of this section includes full building demolition. The procedures described herein apply to all demolition work where a worker may be occupationally exposed to lead as well as to the disposal of the demolition debris. The Contractor shall assume that any painted surface not tested under this specification shall be assumed to contain lead paint and it shall be the Contractor's responsibility to protect workers performing under this Contract. This may require additional testing by the Contractor to verify lead content.

B. The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State and local regulations pertaining to work practices, hauling and disposal of hazardous waste, protection of workers and visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Engineer and Owner harmless for failure to comply with any applicable work, hauling, disposal, safety, health or regulation on the part of himself, his workers or his subcontractors.

C. The Contractor is required to ensure the protection of workers performing any related demolition work that will affect surfaces coated with lead-containing paint, as well as, protecting the public and the environment from exposure to lead dust.

D. CODES AND STANDARDS:

1. All work shall conform to the standards set by applicable Federal, State and local laws, regulations, ordinances, and guidelines in such form in which they exist at the time of the work on the contract and as may be required by subsequent regulations.

2. In addition to any detailed requirements of the Specification, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storing of lead waste material.

3. The following references are cited as applicable standard and regulations as amended:

a. Code of Federal Regulations (CFR) Publications:

29 CFR 1910	General Industry
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts and Mists
29 CFR 1926.57	Ventilation
29 CFR 1926.62	Lead in Construction
29 CFR 1926.200	Signs, Signals and Barricades
29 CFR 1926.354	Welding, Cutting and Heating in Way of Preservative Coatings
29 CFR Subpart T	Demolition
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards for Lead
40 CFR 61 Subpart A	General Provisions
40 CFR 61.152	Standard for Waste Manufacturing, Demolition, Renovation, Spraying, and Fabricating Operations.
40 CFR 241	Guidelines for the Land Disposal of Solid Wastes
40 CFR 257	Criteria for Classification of Solid Waste
40 CFR 261 and 262	Waste Disposal Facilities and Practices

b. American National Standards Institute (ANSI) Publications:

29.2-79	Fundamentals Governing the Design and Operation of Local Exhaust Systems
288.2-80	Practices for Respiratory Protection

c. National Institute of Occupational Safety and Health (NIOSH) Publications:

Manual of Analytical Methods, 4th Ed.

d. Underwriters Laboratories, Inc. (UL) Fire Resistance Directory Publications:

586-77 (R 1982)	Test Performance of High Efficiency Particulate, Air Filter Units

E. All regulations by the above and other governing agencies in their most current version are applicable throughout this project. Where there is a conflict between this Specification and the cited State, Federal, or local regulations, the more restrictive or stringent requirements shall prevail.

THIS SECTION REFERS TO MANY REQUIREMENTS FOUND IN THESE REFERENCES, BUT IN NO WAY IS IT INTENDED TO CITE OR REITERATE ALL PROVISIONS THEREIN OR ELSEWHERE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO KNOW, UNDERSTAND, AND ABIDE BY ALL SUCH REGULATIONS AND COMMON PRACTICES.

1.03 DEFINITIONS:

A. The following definitions apply to the performance of the work of this project.

1. Action Level: An airborne concentration of lead above 30 micrograms per cubic meter ($\mu g/m^3$) as a time weighted average (TWA) for more than 30 days per year.

2. Area Monitoring: Sampling of lead concentrations within the work area and outside the work area which is representative of the airborne concentrations of lead.

3. Clean Room: An uncontaminated change room directly adjacent to the work area having facilities for storage of employees' personal clothing and uncontaminated work clothes, materials and equipment provided when the airborne exposure to lead is above the PEL.

4. Contractor: The Contractor who is performing work involving lead-containing paint under this Section.

5. Decontamination Area: A contained area adjacent to or connected to the abatement work area and consisting of an equipment room, shower area, and clean room which is used for decontamination of workers, materials and equipment.

6. HEPA Filter Equipment: High efficiency particulate air (HEPA) filtered vacuuming or exhaust ventilation equipment with a UL 586 filter system. Filters shall be of 99.97 percent efficiency for retaining 0.3 micrometer diameter particles.

7. Lead-Containing Paint: Paint, varnish, or stain, which contains lead in excess of 0.0% lead by weight.

8. Lead Permissible Exposure Limit (PEL): 50 $\mu g/m^3$ of air, based upon an 8-hour time weighted average.

9. Sample Location: Area or place where an air or wipe sample is collected.

10. Time Weighted Average (TWA): The TWA is an 8-hour time weighted average for the test of the concentration of lead for worker exposure.

11. Wet Cleaning: The process of removing lead contamination from building surfaces, equipment and other objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as lead contaminated wastes.

12. Work Area: A controlled-access work area, which has no plastic sheeting or other containment barriers, erected to separate the trades.

1.04 SUBMITTALS:

A. NOTIFICATIONS:

1. Provide in proper and timely fashion, all necessary notifications to relevant federal, state, and local authorities and obtain and comply with provisions of all permits or applications required by the work specified, as well as make all required submittals required under those auspices. Contractor shall indemnify the Owner and Engineer from, and pay for all claims resulting from failure to adhere to these provisions. Costs for all permits, applications, and the like are to be assumed by Contractor.

B. Provide four (4) copies of the following Submittals at least 4 weeks prior to commencement of the work of the contract:

1. Copies of all notifications, permits, applications, licenses and like documents required by Federal, State, or local regulations and this specification obtained or submitted in proper fashion,

2. Copies of written medical opinions for each employee who may be occupationally exposed to lead as required by 29 CFR 1926.62 (j)(3)(v),

3. Copies of supervisors' and workers' training certificates,

4. Record of successful respirator fit testing performed by a qualified individual within the previous 6 months for each employee to be used on this project with the employee's name and social security number with each record,

5. Employer's Lead Compliance Program as required by 29 CFR 1926.62, including proposed respiratory protection program and medical monitoring for all employees throughout all phases of the job, including make, model and NIOSH approval numbers of respirators to be used; worker orientation plan; written description of all proposed procedures, methods, or equipment to be utilized, including those that may differ from the Contract Specifications. In all instances, Contractor must comply with all applicable federal, state and local regulations.

6. Proposed number and type (i.e., hazardous waste or non-hazardous waste, open top, front loading, etc.) of dumpsters for waste, proposed location(s),

7. A list of all equipment to be used on site, by make and model,

8. Chain of Command of responsibility at work site including supervisors and competent person, their names, resumes and certificates of training and phone numbers,

9. List of total number of supervisors and workers intended to be assigned to the project, including name and lead awareness qualifications,

10. Material Safety Data Sheets on potentially hazardous materials to be used on the project,

11. Waste Disposal Plan which describes the waste stream and the disposal means (i.e. landfill, recycle, etc.) and includes the name, address, and ID number of the proposed hazardous waste hauler, waste transfer route, and proposed disposal reclamation or treatment facility,

12. Name and address of the proposed construction debris site,

13. Construction schedule including sequence of critical work.

No work on the project will be allowed to begin until the Pre-Construction Submittals as listed herein are accepted by the Engineer. Any delay caused by the Contractor's refusal to submit this documentation in a timely fashion does not constitute a claim for extra compensation or a time extension.

C. Submit the following to the Engineer as a Post-Construction submittal package:

1. Copies of waste manifests and receipts acknowledging disposal of all lead waste material from the project, showing delivery date, quantity, and appropriate signature of landfill's authorized representative,

2. DEP approval for all waste reduction techniques, if utilized,

3. A notarized copy of the daily list of workers and site entry-exit logbook,

4. All personnel monitoring results,

5. All TCLP testing results.

1.05 GENERAL WORK PROCEDURES:

A. Work shall be carried out in sequential phases. Inspection and approval of each phase by the Engineer shall be sought and gained before proceeding to the next phase and in accordance with the schedule approved. This shall include demolition requirements for work area clearance and work area release before other work. As a Contract requirement, any reasonable delay caused by this requirement will not constitute a basis for claim against the Engineer or Consultant. Contractor must coordinate the work of this section with the work of all other trades.

B. At no time will the Owner permit storage of debris generated from demolition activities inside buildings at the site, and any storage of materials will be subject to the Owner's approval. Assure security of debris at all times.

1.06 SPECIAL CONSIDERATIONS:

A. TESTING REFERENCES:

1. Testing for lead paint has been performed on a representative number of painted components at the property located at 11 Hope Street in East Lyme, Connecticut using Atomic Absorption Spectrometry (AAS) analysis of paint chip samples. Testing results are found in the attached Table 2 – Lead Paint Sample Results.

B. The Contractors shall follow the requirements of this section regarding component removal, demolition, worker exposure and protection, work area cleaning, and waste disposal.

C. Work Affected – In general, the following activities are minimum requirements of this section and affect the demolition performed on the painted components:

1. No torch cutting, mechanical sanding, stripping, or abrasive methods of paint removal shall occur.

2. No demolition activities may occur which increase the workers' exposure above the Action Level of 30 $\mu g/m^3$. Contractor shall fully complete with the OSHA lead standard at 29 CFR 1926.62.

3. Workers shall be informed of the components to be renovated or demolished that have been identified as containing lead.

4. Worker protection, at a minimum, shall comply with the OSHA Lead Standard 29 CFR 1926.62. Worker Right to Know and Health and Safety Standards of 1926.62 shall also apply to the work of this section. The OSHA Hazard Communication Standard also applies to work described in this section.

5. Separation of Trades: Unprotected, untrained workers or trades shall not perform any related work within the same vicinity as demolition-involving components identified with lead.

6. Clean-up Activities: The Contractor shall maintain work zones free of accumulated debris, lead dust, and paint chips.

1.07 FEES, PERMITS & LICENSES:

A. The Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or process in the performance of the work specified in this section. The Contractor shall be solely responsible for costs, damages, or losses resulting from any infringement of these patent rights or copyrights. The Contractor shall hold the Engineer and Engineer harmless from any costs, damages, and losses resulting from any infringement of these patent rights or copyrights. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing, patent or royalty fee for use in the performance of the job, the Contractor shall be responsible for the fee or royalty fee and shall disclose the existence of such rights.

B. Contractor shall be responsible for costs for all licensing requirements, where applicable and notification requirements and all other fees related to the Contractor's ability to perform the work in this Section.

C. Secure all necessary permits for work under this Section, including hauling, removal, and disposal, fire, and materials usage, or any other permits required to perform the specified work.

1.08 CLEAN-UP:

A. Maintain the work site in a neat and orderly manner at all times, so as not to interrupt or infringe upon the work of other trades.

B. Comply with all requirements for release of work areas as described in the project specification.

C. It is the prerogative of the Engineer to inspect whenever deemed necessary, the Contractor is responsible for meeting, and correcting any deficiencies discovered which do not meet the current applicable regulations and requirements of these specifications.

1.09 COORDINATION:

A. At no time shall Contractor cause or allow to be caused conditions which may cause risk or hazard to the general public or conditions that might impair safe use of the facility. The use of the facility's electricity, water or like utilities by the Contractor shall be as specified in Division 1.

B. Coordinate the work of this section with that of all other trades. Phasing and scheduling of this project will be subject to the approval of the Engineer. The work of this Section shall be scheduled and performed so as not to impede the progress of the project as a whole. Work shall not proceed in any area without the express consent of the Engineer. The Contractor shall be

available within 24 hours notice for additional work if after acceptance of the work it is found that complete demolition was not achieved from the initial work effort as determined by the Engineer.

C. The proposed schedule for the work in this Section shall show the time involved from start to finish of demolition operations, including preparation, removal, clean-up, Engineer's inspections and de-mobilization portions of the job.

D. A final schedule shall then be prepared and coordinated with the Engineer and Owner. The final scheduling shall be submitted in writing before the commencement of work.

E. Complete activities in the phases of the agreed upon final schedule. The work must be completed in a continuous, uninterrupted operation.

F. Unless specifically authorized by the Engineer, the work of this project shall be conducted according to the hours established in Division 1.

G. Inspections: The Engineer may perform visual inspections during the work of this section, as described below. Contractor shall not proceed with work until Contractor has received Engineer's approval at the stages identified below:

1. During: Before the commencement of a proposed alternative method other than specified.

2. Post Inspection: At the completion of work and final clean-up, before clearance or removal of any critical barriers and decontamination unit from the work area.

3. Waste Removal Inspection: Notify Engineer removal of hazardous waste from the site.

1.10 AUTHORITY TO STOP WORK:

A. The Engineer has the authority to stop the demolition work, at any time the Engineer determines that conditions are not within the specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the Engineer. Standby time required to resolve violations shall be at the Contractor's expense, and shall not be cause for extending the completion date.

1.12 EMERGENCY PRECAUTIONS:

A. The Contractor shall establish emergency and fire exits from the work area.

B. When an injury occurs, the Contractor shall stop work until the injured person has been removed from the work area.

1.13 DISPOSAL OF WASTE MATERIAL:

A. GENERAL:

1. Contractor and transporting Contractor will be required to comply with the Resource Conservation and Recovery Act (RCRA) and with all applicable federal, state and local regulations.

2. Contractor shall be responsible for disposing of all waste determined by Toxicity Characteristic Leaching Procedure (TCLP) to be hazardous. If TCLP testing has not been performed, the Demolition Contractor shall be responsible for testing the waste.

3. Contractor and all sub-contractors shall comply with all EPA regulations.

1.14 RELATED WORK SPECIFIED ELSEWHERE

A. Related work specified elsewhere: Examine all Drawings and all other Sections of the Specifications for requirements of related sections affecting the work of this Section, including but not limited to:

1. 02051 ASBESTOS ABATEMENT
2. 02075 UNIVERSAL AND HAZARDOUS WASTE

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS:

A. The Contractor shall deliver all materials and equipment to the site in the original containers bearing the name of the manufacturer, and details for proper storage and use.

B. All materials or equipment delivered to the site shall be unloaded, temporarily stored, and transferred to the work area in a manner that shall not interfere with other trades working in the area.

C. Unloading and temporary storage sites, and transfer routes, must be approved in advance by the Owner and Engineer.

D. Damaged or deteriorated materials may not be used and must be promptly removed from the premises. Material that becomes contaminated shall be packaged and legally disposed in an approved, secure landfill.

2.02 MATERIALS:

A. All materials and equipment proposed to be used on this project shall be subject to the acceptance of the Engineer. The list of required materials shall include, but not necessarily limited to the following:

1. Fire retardant polyethylene sheeting, minimum thickness of six (6)-mil.
2. Plastic bags, minimum thickness of six (6)-mil.
3. Duct Tape, up to 3 inch width
4. Lead Warning Signs, as required by Connecticut Regulations and OSHA Hazard Communication requirements.
5. Flexible duct for ventilation units (if required)
6. Spray adhesive, fire retardant
7. Personal Protective Equipment, NIOSH approved respirators
8. Ventilation units with HEPA filtration and exhaust fans.
9. HEPA vacuums
10. Trisodium-Phosphate (TSP) and product data
11. Cloth tarpaulin

2.03 TOOLS AND EQUIPMENT:

A. Transportation Equipment: Transportation equipment, as required, shall be suitable for loading, temporary storage, transporting, an unloading waste without exposure to persons or property. All over-the-road transportation equipment must carry the appropriate hazardous waste transport licenses and insurance.

B. Vacuum Equipment: All vacuum equipment utilized in the work area shall utilize HEPA filtration systems.

C. Water Sprayer: The water sprayer shall be an airless or other low-pressure sprayer for water application.

D. Other Tools and Equipment: The Contractor shall provide other suitable tools including but not limited to: rounded edge shovels, rakes, brooms, and carts.

E. The Contractor shall provide ground fault circuit interrupters (GFCI) to protect all electrical cord and connections.

F. Approved lighting equipment for use in the work area.

G. Scaffolding: Scaffolding, as required to accomplish specified work, shall meet all applicable Federal, State and local safety regulations and used in accordance with manufacturer's specifications.

PART 3 – EXECUTION

3.01 SCHEDULING:

A. The Contractor shall coordinate all scheduling with the Engineer and the Owner. A schedule of work shall be submitted to the Engineer before contract performance.

3.02 UTILITIES:

A. Provide all necessary connections for temporary utilities in the workplace during work. Shut down and disconnect all electrical power to the work area so that there is no possibility of reactivation and electrical shock during the work. The temporary electrical power shall be in accordance with all OSHA requirements.

3.03 IDENTIFICATION OF HAZARDS:

A. Prior to any work involving lead-containing items, the contractor shall identify all work activities in which a worker may be occupationally exposed to lead.

B. The Contractor shall initially determine if any worker may be exposed to lead above the action level.

3.04 BARRIERS AND ISOLATION AREAS:

A. All lead in demolition work areas shall remain isolated from all other trades on the project and remain inaccessible to the public. Contractor shall monitor the access to the demolition work areas. The below listed items are required to control the generation of lead-containing dust during demolition activities. The Contractor is ultimately responsible for cleaning all generated dust and paint debris from demolition operations and must maintain work areas free from lead dust generated from demolition activities.

1. Signs shall be posted at all approaches to the work area warning that work-involving lead is being conducted in the vicinity. Signs shall be in bold lettering not smaller than two inches tall.

2. Barriers shall not be removed until the work areas are thoroughly cleaned and approved by the Engineer.

3.05 APPROVALS AND INSPECTIONS:

A. All temporary facilities, work procedures, equipment, materials, services, and agreements must strictly adhere to and meet this Section along with EPA, OSHA, regulations and recommendations as well as federal, state, and local regulations. Where there exists overlap of these regulations, the most stringent one applies. All work performed by the Contractor is further subject to approval of the Engineer.

3.06 PERSONAL SAMPLING – CONTRACTOR:

A. Perform personal air sampling during all demolition work to determine worker exposure limits. The results of such sampling shall be posted, provided to individual workers, and submitted to Engineer as described herein.

B. Provide sampling to check personal exposure levels. Representative sampling shall be taken for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken for repeated working conditions if working conditions remain unchanged, but must be taken every time there is a change in the removal operation, either in terms of the location or the type of work. Sampling will be used to determine eight-hour Time-Weighted-Averages (TWA). Personal sampling shall be as outlined in OSHA Standard 29 CFR 1926.62. The Contractor is also responsible for monitoring blood lead levels as outlined in 29 CFR 1926.62.

C. Air sampling results shall be transmitted to the Engineer and individual workers available at the job site in written form no more than forty-eight (48) hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analyst's name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in micrograms/cubic meter ($\mu g/m^3$).

D. The Contractor's testing lab shall be AIHA accredited for analysis of metals. Contractor shall submit for Engineer's review and acceptance the name and address of the laboratory, certification(s) of AIHA accreditation for metal analysis, listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control program.

E. Air monitoring frequency will be established in accordance with the requirements set forth in 29 CFR 1926.62.

3.07 WORK PROCEDURES:

A. The contractor shall initiate, and continue, sufficient engineering and work practice controls, as described in the Contractor's Lead Compliance Program, to reduce and maintain worker exposures to lead at or below the Action Level.

B. The following work practices are specifically required by these specifications:

1. All persons except those directly involved in the work shall be excluded from the work area. Physical barriers shall be used, where necessary, to limit access to the work area for the duration of the demolition operations. Warning signs may be posted in accordance with applicable regulations.

2. Provide hand-washing facilities and assure that all workers thoroughly wash their hands and face upon exiting the work area. Workers shall pay careful attention to cleanse the hands and face when decontaminating. Provide hygiene facilities, including shower, as required based on initial assessment and continued monitoring.

3. Thoroughly wet the building materials or areas to be demolished and mist the air to reduce the potential for creating airborne lead and dust.

4. All equipment used by the workers inside the work area shall be either left in the work area or thoroughly decontaminated before being removed from the area. Extra work clothing (in addition to the disposable suits supplied by the Contractor) shall be left in the clean area until the completion of work in that area. The clean area shall be cleaned of all visible debris and disposable materials daily.

5. Under no circumstances shall workers or supervisory personnel eat, drink, smoke, chew gum, or chew tobacco in the work area; to do so shall be grounds for the Engineer to stop all demolition operations. Only in the case of life threatening emergency shall workers or supervisory personnel be allowed to remove their protective respirators while in the work area. In this situation, respirators are to be removed for as short a duration as possible.

3.08 WORK PROCEDURES:

A. Feasible engineering controls shall be implemented by the Contractor as described in the Lead Compliance Program to minimize the possibility of contamination of areas adjacent to the work area. The following activities are the minimum requirements of this section and affect the demolition performed on the painted components:

1. No torch cutting, mechanical sanding, stripping, or abrasive methods of paint removal shall occur.

2. No demolition activities may occur which increase the workers exposure above the Action Level of 30 $\mu g/m^3$. Contractor shall fully comply with the OSHA lead standard 29 CFR 1926.62.

B. Workers shall be informed of the components to be renovated that are identified as containing lead.

C. Separation of Trades: Unprotected, untrained workers or trades shall not perform any related work within the same areas as demolition involving components identified as containing lead. Other trades may not enter these areas until clean-up procedures are completed.

3.09 STORAGE OF WASTE:

A. Use of waste containers on site shall be controlled under the following requirements:

1. Location of waste containers on site shall be subject to Owner's approval.

2. The waste containers lined shall be lined with two layers of six-mil polyethylene sheeting, be solid, enclosed containers, locked and sealed at all times. This requirement applies to waste classified as hazardous based on TCLP testing.

3. Contractor shall comply with all federal, state, and local regulations and ordinances regarding lead waste storage.

END OF SECTION

BUILDING DEMOLITION SPECIFICATIONS

11 Hope St., East Lyme, CT
Table 2
Lead Paint Sample Results

Sample ID	Sample Description	Analytical Results (% lead by weight)
L1	White Paint on Sheetrock – 2nd Floor	0.021
L2	Green Paint on Wood Cabinets – 2nd Floor	0.085
L3	White Paint on Exterior Wood Door Trim	3.4
L4	White Paint on Exterior Wood Window Trim	5.8
L5	Interior Pinkish Walls – 1st Floor	<0.011