

THE CITY OF WALTHAM
MASSACHUSETTS
PURCHASING DEPARTMENT

**ABATEMENT & DEMOLITION OF THE YOUNG BUILDING,
509 MOODY STREET, WALTHAM**

ADDENDUM NO. 6

November 16th, 2018

CHANGES, CORRECTIONS AND CLARIFICATIONS

The attention of bidders submitting proposals for the above subject project is called to the following addendum to the specifications. The items set forth herein, whether of omission, addition, substitution or clarification are all to be included in and form a part of the proposal submitted.

THE NUMBER OF THIS ADDENDUM (NO. 6) MUST BE ACKNOWLEDGED IN YOUR COVER LETTER

ITEM 1: ANSWERS TO POSED QUESTIONS

Q1. Will this project require a Fire Detail?

A1. NO

Q2. What Level PCB exists in the Windows (PPM's)?

A2. Please see the attached

Q3. Assuming the foundation walls along the sidewalk on Moody and Maple Street are going to remain in place to act as a support of excavation for the sidewalk and street. Is this the case?

A3. YES. Leave the walls in place along the street, backfill up to existing finish sidewalk grade.

ITEM 2: ADD ITEM

- 509 Moody St PCB Report

ITEM 3: DELETE AND REPLACE

- 025000 Asbestos Removal and Related Work
- 026000 Misc. Hazmat Removal

End of Addendum 6



November 16, 2018

Mr. Joseph Pedulla, MCPPO, CPM
Chief Procurement Officer
City of Waltham
610 Main Street
Waltham, Massachusetts 02452

via email: jpedulla@city.waltham.ma.us

**RE: PCB Sampling Report
Young Building
509 Moody Street
Waltham, Massachusetts
EFI Project No. 020.00049**

Dear Mr. Pedulla,

EFI Global, Inc. (EFI) conducted testing of the window and door caulk for polychlorinated biphenyl (PCB) analysis at the building located at 509 Moody Street in Waltham, Massachusetts (Site). The sampling was conducted in preparation for demolition of the building.

SITE DESCRIPTION

The Site consists of a two-story masonry structure with a flat, built up roof. The site building was vacant at the time of this assessment. Historically, it was used for mixed commercial/residential use.

PCB TESTING PROCEDURES

EFI collected the PCB samples on November 2, 2018, utilizing hand tools. Three samples were collected from each suspect PCB-containing material during this investigation. Samples of white door/window frame caulk, green door/window frame caulk, and brown window frame caulk were collected and submitted for laboratory analysis. Samples were collected and placed in laboratory-provided glass containers, and were submitted under chain of custody protocol to Alpha Analytical (Alpha) of Westborough, Massachusetts, an accredited laboratory for PCB analysis in accordance with USEPA Method 8082 with soxhlet extraction.

PCB SAMPLE RESULTS

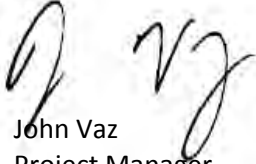
Alpha reported that PCB concentrations were below the laboratory detection limits for all caulk samples submitted. A table with the PCB laboratory results and the laboratory report are attached to this correspondence.

RECOMMENDATIONS

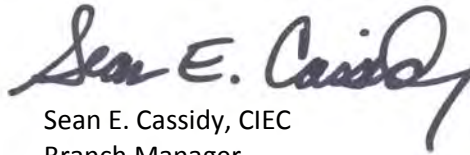
Based on the results of this investigation, PCBs were not detected in any of the samples analyzed by EMSL. As such, EFI does not recommend any additional action regarding PCBs.

EFI is pleased to provide environmental consulting services to the City of Waltham. If you have any questions regarding the contents of this report, or are in need of additional information, please do not hesitate to contact either of the undersigned at 800-659-1202. Thank you for the opportunity to serve your environmental needs.

Sincerely,
EFI Global, Inc.



John Vaz
Project Manager



Sean E. Cassidy, CIEC
Branch Manager

TABLE 1 - PCB SAMPLING RESULTS

CLIENT SAMPLE ID		PCB101		PCB102		PCB103		PCB104		PCB105		PCB106		PCB107		PCB108		PCB109		
SAMPLE DESCRIPTION		WHITE WINDOW/DOOR CAULK	Qual	WHITE WINDOW/DOOR CAULK	Qual	WHITE WINDOW/DOOR CAULK	Qual	GREEN WINDOW/DOOR CAULK	Qual	GREEN WINDOW/DOOR CAULK	Qual	GREEN WINDOW/DOOR CAULK	Qual	BROWN WINDOW CAULK	Qual	BROWN WINDOW CAULK	Qual	BROWN WINDOW CAULK	Qual	
CAS Number	Units																			
PCB by GC																				
Aroclor 1016	12674-11-2	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1221	11104-28-2	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1232	11141-16-5	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1242	53469-21-9	mg/kg	0.286	U	0.292	U	0.268	U	0.289	U	0.33	U	0.322	U	0.297	U	0.303	U	0.299	U
Aroclor 1248	12672-29-6	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1254	11097-69-1	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1260	11096-82-5	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1262	37324-23-5	mg/kg	0.571	U	0.583	U	0.536	U	0.578	U	0.66	U	0.645	U	0.593	U	0.606	U	0.599	U
Aroclor 1268	11100-14-4	mg/kg	0.286	U	0.292	U	0.268	U	0.289	U	0.33	U	0.322	U	0.297	U	0.303	U	0.299	U
PCBs, Total	1336-36-3	mg/kg	0.286	U	0.292	U	0.268	U	0.289	U	0.33	U	0.322	U	0.297	U	0.303	U	0.299	U
U = Below Detection Limit																				



ANALYTICAL REPORT

Lab Number:	L1844916
Client:	E.F.I. 155 West Street Suite 6 Wilmington, MA 01887
ATTN:	John Vaz
Phone:	(978) 578-8964
Project Name:	509 MOODY ST
Project Number:	Not Specified
Report Date:	11/14/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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



Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1844916-01	PCB-101	SOLID	WALTHAM, MA	11/02/18 07:45	11/02/18
L1844916-02	PCB-102	SOLID	WALTHAM, MA	11/02/18 07:50	11/02/18
L1844916-03	PCB-103	SOLID	WALTHAM, MA	11/02/18 07:55	11/02/18
L1844916-04	PCB-104	SOLID	WALTHAM, MA	11/02/18 08:00	11/02/18
L1844916-05	PCB-105	SOLID	WALTHAM, MA	11/02/18 08:05	11/02/18
L1844916-06	PCB-106	SOLID	WALTHAM, MA	11/02/18 08:10	11/02/18
L1844916-07	PCB-107	SOLID	WALTHAM, MA	11/02/18 08:40	11/02/18
L1844916-08	PCB-108	SOLID	WALTHAM, MA	11/02/18 08:45	11/02/18
L1844916-09	PCB-109	SOLID	WALTHAM, MA	11/02/18 08:50	11/02/18

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

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 NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. 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. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. 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. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

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.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

Case Narrative (continued)

Sample Receipt

The samples were received at the laboratory above the required temperature range. The samples were transported to the laboratory in a cooler with ice and delivered directly from the sampling site.

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:

 Melissa Cripps

Title: Technical Director/Representative

Date: 11/14/18

ORGANICS

PCBS

Project Name: 509 MOODY ST**Lab Number:** L1844916**Project Number:** Not Specified**Report Date:** 11/14/18**SAMPLE RESULTS**

Lab ID: L1844916-01
 Client ID: PCB-101
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 07:45
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 11:50
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	571	--	1	A
Aroclor 1221	ND		ug/kg	571	--	1	A
Aroclor 1232	ND		ug/kg	571	--	1	A
Aroclor 1242	ND		ug/kg	286	--	1	A
Aroclor 1248	ND		ug/kg	571	--	1	A
Aroclor 1254	ND		ug/kg	571	--	1	A
Aroclor 1260	ND		ug/kg	571	--	1	A
Aroclor 1262	ND		ug/kg	571	--	1	A
Aroclor 1268	ND		ug/kg	286	--	1	A
PCBs, Total	ND		ug/kg	286	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	62		30-150	B
Decachlorobiphenyl	62		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-02
 Client ID: PCB-102
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 07:50
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 12:03
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	583	--	1	A
Aroclor 1221	ND		ug/kg	583	--	1	A
Aroclor 1232	ND		ug/kg	583	--	1	A
Aroclor 1242	ND		ug/kg	292	--	1	A
Aroclor 1248	ND		ug/kg	583	--	1	A
Aroclor 1254	ND		ug/kg	583	--	1	A
Aroclor 1260	ND		ug/kg	583	--	1	A
Aroclor 1262	ND		ug/kg	583	--	1	A
Aroclor 1268	ND		ug/kg	292	--	1	A
PCBs, Total	ND		ug/kg	292	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-03
 Client ID: PCB-103
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 07:55
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 12:15
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	536	--	1	A
Aroclor 1221	ND		ug/kg	536	--	1	A
Aroclor 1232	ND		ug/kg	536	--	1	A
Aroclor 1242	ND		ug/kg	268	--	1	A
Aroclor 1248	ND		ug/kg	536	--	1	A
Aroclor 1254	ND		ug/kg	536	--	1	A
Aroclor 1260	ND		ug/kg	536	--	1	A
Aroclor 1262	ND		ug/kg	536	--	1	A
Aroclor 1268	ND		ug/kg	268	--	1	A
PCBs, Total	ND		ug/kg	268	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	75		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-04
 Client ID: PCB-104
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 08:00
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 12:27
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	578	--	1	A
Aroclor 1221	ND		ug/kg	578	--	1	A
Aroclor 1232	ND		ug/kg	578	--	1	A
Aroclor 1242	ND		ug/kg	289	--	1	A
Aroclor 1248	ND		ug/kg	578	--	1	A
Aroclor 1254	ND		ug/kg	578	--	1	A
Aroclor 1260	ND		ug/kg	578	--	1	A
Aroclor 1262	ND		ug/kg	578	--	1	A
Aroclor 1268	ND		ug/kg	289	--	1	A
PCBs, Total	ND		ug/kg	289	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	64		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-05
 Client ID: PCB-105
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 08:05
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 12:40
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	660	--	1	A
Aroclor 1221	ND		ug/kg	660	--	1	A
Aroclor 1232	ND		ug/kg	660	--	1	A
Aroclor 1242	ND		ug/kg	330	--	1	A
Aroclor 1248	ND		ug/kg	660	--	1	A
Aroclor 1254	ND		ug/kg	660	--	1	A
Aroclor 1260	ND		ug/kg	660	--	1	A
Aroclor 1262	ND		ug/kg	660	--	1	A
Aroclor 1268	ND		ug/kg	330	--	1	A
PCBs, Total	ND		ug/kg	330	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	55		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	60		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-06
 Client ID: PCB-106
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 08:10
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 12:52
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	645	--	1	A
Aroclor 1221	ND		ug/kg	645	--	1	A
Aroclor 1232	ND		ug/kg	645	--	1	A
Aroclor 1242	ND		ug/kg	322	--	1	A
Aroclor 1248	ND		ug/kg	645	--	1	A
Aroclor 1254	ND		ug/kg	645	--	1	A
Aroclor 1260	ND		ug/kg	645	--	1	A
Aroclor 1262	ND		ug/kg	645	--	1	A
Aroclor 1268	ND		ug/kg	322	--	1	A
PCBs, Total	ND		ug/kg	322	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	63		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	65		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-07
 Client ID: PCB-107
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 08:40
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 13:04
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	593	--	1	A
Aroclor 1221	ND		ug/kg	593	--	1	A
Aroclor 1232	ND		ug/kg	593	--	1	A
Aroclor 1242	ND		ug/kg	297	--	1	A
Aroclor 1248	ND		ug/kg	593	--	1	A
Aroclor 1254	ND		ug/kg	593	--	1	A
Aroclor 1260	ND		ug/kg	593	--	1	A
Aroclor 1262	ND		ug/kg	593	--	1	A
Aroclor 1268	ND		ug/kg	297	--	1	A
PCBs, Total	ND		ug/kg	297	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	64		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-08
 Client ID: PCB-108
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 08:45
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 13:16
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	606	--	1	A
Aroclor 1221	ND		ug/kg	606	--	1	A
Aroclor 1232	ND		ug/kg	606	--	1	A
Aroclor 1242	ND		ug/kg	303	--	1	A
Aroclor 1248	ND		ug/kg	606	--	1	A
Aroclor 1254	ND		ug/kg	606	--	1	A
Aroclor 1260	ND		ug/kg	606	--	1	A
Aroclor 1262	ND		ug/kg	606	--	1	A
Aroclor 1268	ND		ug/kg	303	--	1	A
PCBs, Total	ND		ug/kg	303	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	86		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	88		30-150	B
Decachlorobiphenyl	78		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

SAMPLE RESULTS

Lab ID: L1844916-09
 Client ID: PCB-109
 Sample Location: WALTHAM, MA

Date Collected: 11/02/18 08:50
 Date Received: 11/02/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 11/12/18 13:29
 Analyst: JW
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 11/08/18 01:40
 Cleanup Method: EPA 3630
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3665A
 Cleanup Date: 11/09/18
 Cleanup Method: EPA 3660B
 Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	599	--	1	A
Aroclor 1221	ND		ug/kg	599	--	1	A
Aroclor 1232	ND		ug/kg	599	--	1	A
Aroclor 1242	ND		ug/kg	299	--	1	A
Aroclor 1248	ND		ug/kg	599	--	1	A
Aroclor 1254	ND		ug/kg	599	--	1	A
Aroclor 1260	ND		ug/kg	599	--	1	A
Aroclor 1262	ND		ug/kg	599	--	1	A
Aroclor 1268	ND		ug/kg	299	--	1	A
PCBs, Total	ND		ug/kg	299	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	70		30-150	B

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 11/09/18 18:10
Analyst: AWS

Extraction Method: EPA 3540C
Extraction Date: 11/08/18 01:40
Cleanup Method: EPA 3630
Cleanup Date: 11/09/18
Cleanup Method: EPA 3665A
Cleanup Date: 11/09/18
Cleanup Method: EPA 3660B
Cleanup Date: 11/09/18

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-09 Batch: WG1177173-1						
Aroclor 1016	ND		ug/kg	508	--	A
Aroclor 1221	ND		ug/kg	508	--	A
Aroclor 1232	ND		ug/kg	508	--	A
Aroclor 1242	ND		ug/kg	254	--	A
Aroclor 1248	ND		ug/kg	508	--	A
Aroclor 1254	ND		ug/kg	508	--	A
Aroclor 1260	ND		ug/kg	508	--	A
Aroclor 1262	ND		ug/kg	508	--	A
Aroclor 1268	ND		ug/kg	254	--	A
PCBs, Total	ND		ug/kg	254	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	98		30-150	B
Decachlorobiphenyl	95		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: 509 MOODY ST

Project Number: Not Specified

Lab Number: L1844916

Report Date: 11/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-09 Batch: WG1177173-2 WG1177173-3									
Aroclor 1016	81		81		40-140	0		50	A
Aroclor 1260	81		81		40-140	0		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	104		106		30-150	A
Decachlorobiphenyl	84		83		30-150	A
2,4,5,6-Tetrachloro-m-xylene	101		104		30-150	B
Decachlorobiphenyl	101		99		30-150	B

Project Name: 509 MOODY ST**Lab Number:** L1844916**Project Number:** Not Specified**Report Date:** 11/14/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1844916-01A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-02A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-03A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-04A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-05A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-06A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-07A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-08A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)
L1844916-09A	Glass 60mL/2oz unpreserved	A	NA		8.2	Y	Absent		PCB-8082-CAULK(14)

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

GLOSSARY

Acronyms

EDL	- Estimated 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 EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
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.
LFB	- Laboratory Fortified Blank: 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.
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.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
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.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

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.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report



Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

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 ten times (10x) 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. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- 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 lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- 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. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. 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 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.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

Project Name: 509 MOODY ST
Project Number: Not Specified

Lab Number: L1844916
Report Date: 11/14/18

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

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.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**
EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 11/2/18

ALPHA Job #: L184491C

Client Information
 Client: EFI Global
 Address: 155 West Street Ste 6
Wilmington MA 01887
 Phone: 339 227 5424
 Email:

Project Information
 Project Name: 509 Moody St
 Project Location: Waltham MA
 Project #: 020.000
 Project Manager: John Varz
 ALPHA Quote #:

Report Information - Data Deliverables
 ADEx EMAIL

Billing Information
 Same as Client info PO #:

Turn-Around Time
 Standard RUSH (only confirmed if pre-approved)
 Date Due:

Regulatory Requirements & Project Information Requirements
 Yes No MA MCP Analytical Methods Yes No CT RCP Analytical Methods
 Yes No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
 Yes No GW1 Standards (Info Required for Metals & EPH with Targets)
 Yes No NPDES RGP
 Other State /Fed Program Criteria

Additional Project Information:
 *Manual Soxhlet Extraction.
 Please email john. varz
 sean. cassidy
 lynela.mcdermott
 @efiglobal.com.

ANALYSIS	SAMPLE INFO
VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 534.2	Filtration
SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	<input type="checkbox"/> Field
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	<input type="checkbox"/> Lab to do
METALS: <input type="checkbox"/> RCRA5 <input type="checkbox"/> RCRA8 <input type="checkbox"/> PPI3	Preservation
EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	<input type="checkbox"/> Lab to do
VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
PCB: <input type="checkbox"/> PEST	
TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	
	Sample Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
44916 -01	PCB-101	11/2/18	745	Solid.	JV
	02 PCB-102		750		
	03 PCB-103		755		
	04 PCB-104		800		
	05 PCB-105		805		
	06 PCB-106		810		
	07 PCB-107		840		
	08 PCB-108		845		
	09 PCB-109		850		

Container Type
 P= Plastic
 A= Amber glass
 V= Vial
 G= Glass
 B= Bacteria cup
 C= Cube
 O= Other
 E= Encore
 D= BOD Bottle

Preservative
 A= None
 B= HCl
 C= HNO₃
 D= H₂SO₄
 E= NaOH
 F= MeOH
 G= NaHSO₄
 H = Na₂S₂O₈
 I= Ascorbic Acid
 J = NH₄Cl
 K= Zn Acetate
 O= Other

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	11/2/18	<i>[Signature]</i> AAL	11/2/18 10:10
<i>[Signature]</i> AAL	11/2/18 10:10	<i>[Signature]</i>	11/2/18 11:30
<i>[Signature]</i>	11/2/18 12:00	<i>[Signature]</i>	11/2/18 12:00

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.
 FORM NO: 01-01 (rev. 12-Mar-2012)

SECTION 025000

ASBESTOS REMOVAL AND RELATED WORK

PART 1 - GENERAL

1.1 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 of the Specifications.
- B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of Article III, Paragraph 1 of the CONTRACT AND GENERAL CONDITIONS.

1.2 DESCRIPTION OF WORK

- A. The intent of the Work is to completely remove all Asbestos Containing Materials (ACM) from the Site building to accommodate building demolition and redevelopment work. The CONTRACTOR and Asbestos Abatement SubCONTRACTOR shall furnish all labor, material, supervision, construction tools, transport vehicles and equipment necessary to perform the following work:
 - 1. Pre-bid inspection. The potential Bidders are required to visit the Project Building prior to bidding in order to determine the actual amounts of asbestos containing and asbestos contaminated materials to be removed, as well as staging and protection requirements.
 - 2. Documentation of worker training, respiratory protection and medical examination.
 - 3. Provide access, support and protection to all authorized visitors and inspectors.
 - 4. Filing of and/or obtaining all required notifications, permits, work plans and payment of all required associated costs and fees.
 - 5. Work area preparation and work practices.
 - 6. Proper removal, packaging, transport and disposal of all asbestos containing materials as specified herein. Note that vehicles transporting bulk-loaded demolition debris containing a reportable quantity (greater than 1 pound) of asbestos shall be properly placarded in accordance with USDOT regulations. All drivers shall be appropriately trained and licensed to transport this material.
 - 7. Isolation of the Work Area for the duration of the works so as to prevent asbestos contaminated dust or debris from passing beyond the isolated area.

Abatement and Demolition of the Young Building, 509 Moody Street

- 8. As part of the work may be performed in the winter months, the CONTRACTOR shall be responsible for snow removal as necessary for the removal of exterior ACMs and to access the building via sidewalks and entryways.

- B. It is the CONTRACTOR’s responsibility to determine the most efficient method to legally perform this Work. Unless specifically noted, this Specification does not dictate specific methods to be implemented in the performance of the Work. The entire application of all ACMs shall be removed inclusive of any substrate contamination, whether present on the substrate surface or embedded in the matrix of the substrate component. After abatement is complete, the building or equipment component must be rendered completely free of asbestos and rendered recyclable, reusable, and/or disposable in accordance with all applicable regulations.

- C. The CONTRACTOR shall perform all work in accordance with these specifications, the USEPA and OSHA regulations, NIOSH recommendations, MassDEP and MassDLS regulations, local statutes, local ordinances, local codes and any other applicable federal, state and local government regulations and guidelines.

- D. The proposed work includes the removal of the following identified ACMs:

ACM MATERIALS INVENTORY

Material Description	Material Location	Estimated Quantity
Brown Skylight Caulking	Roof	120 SF
Interior White Window Glazing	1 st Floor 517 Space Foyer	1 Unit
Black Paper Under Tile on Subfloor	1 st Floor 515 Space	800 SF
Gray Pebble Sheet Flooring Bottom Layer	1 st Floor 509 Space Exam Room 3 and Bathroom	450 SF
Floor Leveler Under Carpet	2 nd Floor Common Area	1,000 SF
9” x 9” Floor Tile	1 st Floor 509 Space Back Foyer	100 SF
Yellow Pattern Linoleum	2 nd Floor Unit 3 Bathroom	50 SF
Joint Compound and Associated Sheetrock	1 st Floor 509 Space	28,500 SF

SF – Square Feet

- E. The CONTRACTOR is advised that paints and debris existing within the building may contain lead. The CONTRACTOR shall at all times be in compliance with OSHA regulation 29 CFR 1926.62 Lead in Construction; Interim Final Rule as well as other applicable regulatory requirements and other applicable portions of the contract documents.

1.3 SCHEDULING

- A. The CONTRACTOR and the Consultant shall develop an abatement schedule for each phase of work at the Pre-Construction Conference. The Consultant may choose to alter the work sequence as they see fit.

- B. The CONTRACTOR shall update the schedule and submit any schedule changes for review by the Consultant at the weekly construction meetings.

1.4 LOCATION OF WORK AND SITE CONSTRAINTS

- A. Location of work areas, descriptions, estimated types and quantities of asbestos-containing materials (ACM) are described in the Abatement Schedule are presented above. If additional ACM's are encountered, CONTRACTOR shall notify Consultant immediately and have an asbestos removal team prepared to abate the material.
- B. The Abatement Schedule identifies all suspect ACM materials encountered and bulk sampled during the survey, including concealed piping insulation. The quantities are provided for guidance and may not correspond exactly to the quantity to be removed. CONTRACTOR shall determine quantities of asbestos for bidding purposes.
- C. Temporary Utilities: The CONTRACTOR will be required to provide temporary power, water, and bathroom facilities during the abatement period. Refer to Section 015000 for procedures and costs relating to sanitary facilities, temporary power and temporary water.

1.5 AUTHORITY TO STOP WORK

- A. City of Waltham has the authority to stop the work at any time City of Waltham determines either personally or through the services of City of Waltham's Asbestos Monitor 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 City of Waltham's Asbestos Monitor. Standby time required to resolve violations shall be at the CONTRACTOR's expense, and any fines, etc., for hazardous conditions or non-compliance will be at the CONTRACTOR's expense, and will not be grounds for change orders or time extension.
- B. City of Waltham's Asbestos Monitor shall notify the CONTRACTOR when airborne fiber levels measured outside the work area enclosures or at the boundary of regulated areas exceed 0.010 f/cc or established background levels, at which time City of Waltham's Asbestos Monitor will direct the CONTRACTOR to stop work, determine the cause of the elevated fiber levels and implement corrective actions.
- C. Stop work orders may be issued for, but not limited to the following:
 - 1. Breaks in barriers.
 - 2. Loss of negative air (0.02 inches of water column - minimum negative pressure to be maintained).
 - 3. Leakage to other areas.
 - 4. Fiber concentrations outside the work area, which exceed 0.010 f/cc for any one PCM sample.
 - 5. If the CONTRACTOR disregards laws or regulations of any regulatory or governing body having jurisdiction.
 - 6. If the CONTRACTOR's work presents a risk to the building, to building occupants to the general public or to the environment as determined by City of Waltham or the Consultant.

- D. The absence of a stop work order by City of Waltham or City of Waltham's Asbestos Monitor shall not in any way be construed as an approval or acceptance of the CONTRACTOR's work.

1.6 CONTRACTOR QUALIFICATIONS

- A. City of Waltham shall approve the proposed Asbestos Abatement SubCONTRACTOR and will be based upon submission by the CONTRACTOR of the following:
 - 1. Insurance and bonding as stated in the Contract Documents.
 - 2. Licensing by the MassDLS as an Asbestos Abatement Contractor.
 - 3. Names and locations of at least three asbestos abatement projects similar in scope and size to this project completed by the proposed Asbestos Abatement SubCONTRACTOR. Provide the name and phone number of a contact person for each referenced asbestos abatement project.

1.7 PERSONNEL QUALIFICATIONS

- A. All personnel of the CONTRACTOR or any approved SubCONTRACTORS involved with this work shall meet the following minimum qualifications:
 - 1. Asbestos worker medical examination within the past year in accordance with OSHA 1926.1001 with a physician's written opinion that the worker has no condition that would preclude him/her from working with asbestos or wearing a respirator.
 - 2. Current certification by the MassDLS as an Asbestos Supervisor or Asbestos Worker.

1.8 AVAILABILITY OF TRAINED PERSONNEL

- A. There shall be a sufficient number of trained and qualified workers, foremen and superintendents to accomplish the work within the required schedule. No untrained nor fully qualified and pre-approved person shall be employed to speed up completion of the abatement work.

1.9 DEFINITIONS

- A. All terms not defined herein shall have the meaning given in the applicable publications and regulations.
- B. Abatement: Procedures to control fiber release from asbestos-containing materials. Includes encapsulation, enclosure, and removal.
- C. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time.

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- D. Asbestos: The name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible and are separated into fibers. Asbestos includes chrysotile, crocidolite, amosite, anthophyllite, and actinolite.
- E. ACM or Asbestos-containing materials: Any material containing more than one percent by weight of asbestos of any type or mixture of types.
- F. Asbestos wastes: All building materials and debris, insulation, disposable clothing and protective equipment, plastic sheeting and tape, exhaust systems or vacuum filters, or any abatement equipment that is or has been contaminated with asbestos and cannot be completely cleaned by vacuuming or by washing.
- G. Authorized Visitors: Any visitor authorized by City of Waltham, the Consultant or any representative of a regulatory agency or other agency having jurisdiction over the project.
- H. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.
- I. Critical Barrier: A solid asbestos impermeable partition erected to constitute a work area closure; the outer perimeter of an asbestos work area, usually erected across corridors or other open spaces to complete containment.
- J. Decontamination Enclosure System: A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system always contains at least one airlock.
- K. Encapsulation: All herein specified procedures necessary to coat all asbestos-containing materials with an Encapsulant to control the possible release of asbestos fibers into the ambient air.
- L. Enclosure: All herein specified procedures necessary to complete enclosure of all ACM behind airtight impermeable, permanent barriers.
- M. Friable Asbestos Material: Material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
- N. Glovebag: A sack (typically constructed of 6-mil transparent polyethylene or polyvinylchloride plastic) with two inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.
- O. HEPA Filter: Equipment with a High Efficiency Particulate Air (HEPA) filter, greater than 99.97 percent efficiency by 0.3-micron DOP test, and complying with ANSI Z9.2 (1979).
- P. PACM: Presumed asbestos-containing materials.
- Q. Removal: All herein specified procedures necessary to strip all ACM from designated areas and to dispose of these materials at an acceptable site.
- R. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.
- S. TSI: Thermal system insulations which include all types of insulating materials on boilers, tanks, heat exchangers, pipes, ducts, breeching and other machinery, equipment and components which require insulation.

- T. VAT: Vinyl asbestos (floor) tile.
- U. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

1.10 EMERGENCY PRECAUTIONS

- A. The CONTRACTOR shall develop and submit a written fire protection plan, which specifically addresses fire protection during asbestos abatement. This plan shall be submitted to City of Waltham for review prior to the start of work.
- B. The CONTRACTOR shall establish and maintain emergency and fire exits from the work areas. The CONTRACTOR shall submit a written emergency evacuation plan to the City and to the Consultant for review.
- C. Local emergency medical personnel, both ambulance crews and hospital emergency room staff, shall be notified prior to commencement of abatement operations as to the possibility of having to handle contaminated, injured workers, and shall be advised on safe decontamination. The CONTRACTOR shall submit copies of such notifications to the Consultant.
- D. The CONTRACTOR shall have a written Health and Safety plan. When an injury occurs the CONTRACTOR shall stop work and implement fiber reduction techniques (e.g., water spraying) until the injured person has been removed from the work area.
- E. Before the CONTRACTOR starts any removal of the asbestos material, the CONTRACTOR shall notify the local police and fire departments as to the proper personal protective equipment required by persons providing emergency response services. The CONTRACTOR shall make every effort to help these agencies form plans of action should their personnel need to enter contaminated areas.

1.11 SUBMITTALS

- A. The CONTRACTOR shall submit each item in this Article according to the Conditions of the Contract and Section 013300, for information only, unless otherwise indicated.
- B. All submittals shall be submitted to the Consultant prior to the start of work.
- C. Abatement Plans using conventional containment and negative pressure shall be submitted prior to beginning work. The Work Plan shall include, at a minimum, the following:
 - 1. Layout of project execution components showing the configuration of the containment area.
 - 2. A description of Security System, warning signs and labels for bags and drums.
 - 3. Access routes to asbestos controlled areas.

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4. Copy of notification to police department, fire department and local ambulance and hospital.
 5. A description of wetting agents and low pressure wetting system.
 6. Description of enclosures to be used.
 7. Description of wall, floor and opening coverings and sealing tapes.
 8. Fire Protection Plan, safety plan, and emergency evacuation plan.
 9. Detailed plans for decontamination facilities, toilets and systems allowing intra-room communication and communication between the work area and other areas.
 10. Engineering systems for exposure control showing the number, location and capacity of exhaust systems, the expected direction of flow and the negative pressure in each work area.
 11. Submit manufacturer's certification that vacuums, ventilation equipment, and other equipment required to contain airborne asbestos fibers conform to ANSI Z9.2 and to requirements as listed in this Specification.
 12. Materials Safety Data Sheets (MSDS's) for all products used on the Project.
 13. Standard Operating Procedure showing how workers, visitors, and employees will be protected from exposure and how spaces outside the work areas will be protected from contamination until completion of the work.
- D. If bulk demolition of ACM is utilized, a separate work plan shall be prepared by the CONTRACTOR addressing the bulk demolition and segregation of material. The CONTRACTOR shall submit this Work Plan to MassDEP for review and approval. This work plan shall include the following:
1. A description of the wetting procedures to be used for all phases of the work including, but not limited to demolition, load-out, etc. This item shall address the amount of water to be used, size and number of hoses, water source and means for determining whether adequate water is being used (lack of visible emissions, compliance with air sampling action level, etc.). At minimum, several 1.5" or larger fire hoses shall be required with adequate pressure to apply water to all areas of demolition.
 2. A description of the procedures to be used to contain water run-off.
 3. Proposed methodology of bulk loading including minimizing cross-contamination of surrounding areas.
 4. A description of air monitoring locations, equipment, and procedures.
 5. A description of the proposed transport vehicles including transporter's name, size of vehicles, type of container, etc.

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6. A description of the proposed packaging procedures (minimum of two, 10-mil pre-fabricated liners per load, sized to fit the transport vehicle).
 7. Proposed landfill with applicable license to accept asbestos waste.
 8. Proposed methodology to final clean basement floors and/or foundation walls after bulk materials have been removed.
 9. Proposed locations of remote decontamination facilities including written waiver from MassDLS and MassDEP for use of remote decontamination facility.
 10. Proposed methodology for decontamination of transport vehicles and demolition equipment including wash down procedures, provisions for capturing wash water, etc.
 11. Application for, and obtaining of waivers and exemptions which may be required by various regulatory agencies since this demolition work and clean-up will be performed instead of conventional asbestos abatement.
 12. Standard Operating Procedure showing how workers, visitors, and employees will be protected from exposure and how spaces outside the work areas will be protected from contamination until completion of the work.
- E. To comply with applicable regulations, notify appropriate regulatory agencies of abatement activities.
1. Provide the required written notification at least 10 days before the start of the asbestos abatement activity to the MassDEP and MassDLS. MassDEP has indicated that an individual demolition and asbestos abatement permit will be required for each building.
 2. Provide the required written notification by registered mail to local authorities as required.
 3. Obtain and process all applicable forms and permits required.
- F. Sample literature for proposed disposable protective clothing to be used on this Project.
- G. Respiratory Protection System(s) including literature describing sample respirators, hoses and certificate with system literature for the air supply system from manufacturer stating that air supply system meets specifications on quality, quantity and escape time. These submittals are required only if supplied air respiratory protection is used.
- H. Certification of compliance with OSHA requirements including but not limited to medical surveillance, record keeping and personal monitoring.
- I. Documentation of certification in accordance with 453 CMR 6.00 for each employee.
- J. Final landfill destination(s) and copies of transporter and Landfill permits as well as Waste Shipment Records
- K. Copies of all Notifications made to Massachusetts Asbestos Program, Local Board of Health, Local Fire Department, and any other agencies, as required.

- L. Application for and obtaining of waivers and exemptions, which may be required by various regulatory agencies.

1.12 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in text by basic designation only. The list provided below is not intended to be all inclusive of each regulation prevailing over the work.
- B. Environmental Protection Agency (EPA):
 - 1. Regulations for Asbestos (Code of Federal Regulations Title 40, Part 61).
 - 2. Guidance for Controlling Friable Asbestos-Containing Materials in Buildings.
 - 3. A Guide to Respiratory Protection for the Asbestos Abatement Industry.
- C. Occupational Safety and Health Administration (OSHA):
 - 1. Asbestos Construction Standard ARTICLE 29 CFR Part 1926.1101.
 - 2. Asbestos General Industry Standard ARTICLE 29 CFR 1910.1001
 - 3. Respiratory Protection, 29 CFR 1910.134
- D. National Institute for Occupational Safety and Health (NIOSH):
 - 1. "Respiratory Protection A Guide for the Employee."
- E. American National Standards Institute (ANSI):
 - 1. Z86.1-1973 - Commodity Specification for Air.
 - 2. Z9.2 - HEPA Filter Specifications.
 - 3. Z88.2-1980-Respiratory Protective Equipment
- F. Massachusetts Department of Labor, Division of Occupational Safety
 - 1. The Removal, Containment or Encapsulation of Asbestos (453 CMR 6)
- G. Massachusetts Department of Environmental Protection
 - 1. Amendments to Regulations 310 CMR 7.00, 7.09, 7.15 to Control Airborne Asbestos Emissions for the Control of Air Pollution.
 - 2. DEP Policy Statement Concerning Non-Friable Asbestos Containing Materials, Policy #BWP-96-012.
- H. U.S. Department of Transportation

1. 49 CFR 171 - 180, Hazardous Materials Regulations
2. 51 CFR 42176

PART 2 - MATERIALS AND EQUIPMENT

2.1 GENERAL

- A. All materials or equipment delivered to the site shall be unloaded, temporarily stored, and transferred to the work area in a manner which shall not interfere with operation of others at the site, or employee's access and safety.
- B. Damaged or deteriorated materials shall not be used and shall be promptly removed from the premises. Materials that become contaminated with asbestos-containing material shall be thoroughly cleaned, or sealed in plastic bags or sheeting, labeled, and legally disposed of in an approved, secure landfill.
- C. All materials and equipment shall comply, at a minimum, with all sections of this specification, applicable federal, state, and local codes, and industry standards.

2.2 ABATEMENT EQUIPMENT & SUPPLIES

- A. HEPA-Filtered Exhausts - Air inside each work area shall be exhausted through a High Efficiency Particulate Air (HEPA) filter. Commercially manufactured HEPA-filtered exhaust units, with specification plates intact, must be provided for each work area to attain, at a minimum, four air volume changes per hour and an inward flow velocity of clean air into each work area at the Decontamination Facility of at least 100 feet per minute. The HEPA filter shall be preceded by replaceable pre-filters and the unit must be designed so that it cannot be operated unless all filters are in place. The units must also be designed with a gauge to indicate the pressure drop across filters, and lights and audible alarms to indicate that the filters are properly installed, functional, and when they must be changed. Flexible ducting shall be required to allow exhausting to the exterior of the building. No exhaust with any other type of particulate cleaning system (such as electrostatic precipitators) shall be allowed without prior written approval.
- B. Plastic Sheeting ("Poly") and Bags - shall be polyethylene or equivalent with a thickness of at least 6 mil for all applications.
- C. Wetting Agent or Surfactant - shall be 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether, or equivalent, mixed in the proportion of one ounce of surfactant per five gallons of water. The material shall be odorless, nontoxic, nonirritating, and non-carcinogenic. It shall be applied as a mist using a low pressure sprayer recommended by the surfactant manufacturer.
- D. Tape and Glue - shall be capable of sealing plastic joints and attaching plastic to finished surfaces. The bonding strength and resulting seal integrity shall not be affected by mist or water, wetting or encapsulating agent, or any other materials to be used in the work area.

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- E. Warning Signs and Labels - shall comply with all federal, state, and local codes and regulations.
- F. Waste Containers and Transportation - shall be suitable for loading, temporary storage, transport, and unloading of contaminated waste without risk of ripping, rupture, or exposure to persons, or emissions to the atmosphere. - Transportation methods -shall comply with the provisions of 40 CFR 61, Subpart M, and with any and all state and local hazardous or special waste regulations for temporary storage, transport, and disposal if such codes are enforced in states in which the waste will be stored, transported, or disposed.
- G. Truck Liners - shall be polyethylene or equivalent with a thickness of at least 10 mil for all applications.

2.3 SAFETY SUPPLIES AND EQUIPMENT

- A. Respirator Types - Provide all workers with a full or half face piece respirator which is approved by NIOSH/MSHA for protection against airborne asbestos, and meets the requirements of the OSHA Asbestos Standard. Provide respirators for each worker and at least two extra respirators for use by approved visitors. Minimum respiratory protection required shall be compliant with current OSHA and MassDLS regulations including 453 CMR 6.00 and TITLE 29 CFR 1926.1101
- B. Protective Clothing - Provide all workers and approved visitors with disposable coveralls, head and foot coverings, gloves, eye protection (i.e., safety glasses) and half-face respiratory protection including replacement HEPA filter cartridges.

2.4 ENCLOSURES, SHOWERS AND TOILETS FOR REMOVAL

- A. For each abatement area, provide decontamination facilities located in an area agreed upon with the Consultant. The decontamination facilities shall include a Decontamination Enclosure System for workers and visitors and a Decontamination Enclosure System for loading of asbestos into trucks for transportation to the landfill.
- B. The Decontamination Enclosure System for workers and visitors shall consist of three rooms that serve as three air locks as follows: Clean Room at entrance followed by Shower Room followed by an Equipment Room leading to the Work Area.
- C. The Decontamination Enclosure System for removing asbestos bags or drums from the work area (as applicable) shall consist of an Air Lock from the Work Area leading into the Bag Wash and Wipe Room, and another Air Lock leading to outside the work area.
- D. An Airlock is a system permitting unidirectional flow of air through the decontamination unit. It consists of two curtained doorways at least eight feet apart. Each curtained doorway shall be constructed by placing three overlapping sheets of plastic over a framed doorway, securing each along the top of the doorway. The first and third sheet shall be secured on one side of the doorway and the middle sheet shall be secured on the other side of the doorway. Where size of work area permits, eight-foot distance between doorways is acceptable. Where size of work area is prohibitive, distance between doorways may be adjusted but must allow enough space for one doorway to be closed before the next doorway is opened.

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- E. Provide lockers for storage of workers' street clothes in the clean room. Provide in the same room uncontaminated disposable protective clothing and gear for workers to don prior to entering the contaminated area and for workers to dress into street clothing after they have showered and dried in the shower room as they exit from the contaminated area.
- F. Provide shower room facilities with hot and cold water so arranged as to provide complete showering of workers and visitors as they exit from the contaminated area. Make provisions to prevent any contaminated run-off from the shower room. The shower room facilities and size shall be adequate to allow decontamination and thorough washing of all the workers and visitors within a ten-minute period. The hot and cold water shower shall be functional at all times while workers are within the work area enclosure. Shower water temperature shall be controlled at the tap.
- G. Provide the Equipment Room with storage for contaminated clothing and equipment. In this room, workers and visitors shall dispose of their disposable protective clothing except the respirator as they prepare to enter the Shower Room.
- H. The Bag Wash and Wipe Room shall be equipped with the facilities to wash and wipe the outside of the drum or bags prior to the loading into the trucks for transportation to a landfill. Make provisions to prevent any contaminated run-off from the Bag Wash Room.
- I. The Clean Drum Storage Room shall remain clean at all times.
- J. Provide heating and ventilation in entire Decontamination System so that airflow will be from the outside towards the workspace.

2.5 TOOLS AND EQUIPMENT

- A. Airless Sprayer: Airless sprayers, in sufficient quantity and suitable for application of encapsulating material, shall be used.
- B. Negative Air Filtration Unit: Asbestos filtration devices shall utilize high efficiency particulate air (HEPA) filtration systems, 99.97% efficient to 0.3 microns particulate size.
- C. Scaffolding: Scaffolding, lifts, ladders, and aerial equipment as required to accomplish the specified work, shall meet all applicable safety regulations.
- D. Transportation Equipment: Transportation equipment, as required, shall be suitable for loading, temporary storage, transport, and unloading of contaminated waste without exposure to persons or property. The equipment shall be secured at all times and access restricted to unauthorized personnel.
- E. Vacuum Equipment: All vacuum equipment utilized in the work area shall utilize HEPA filtration systems, 99.97% efficient to 0.3 microns particulate size. Deliver all vacuums to the site with clean waste containers and intact, undamaged HEPA filters installed.

PART 3 – EXECUTION

3.1 COORDINATION AND SCHEDULING

- A. The Asbestos Abatement SubCONTRACTOR shall coordinate all work with the Consultant and the CONTRACTOR.
- B. The CONTRACTOR shall submit to the Consultant prior to contract performance, a schedule of work including sequencing of asbestos removal areas and demolition.
- C. The CONTRACTOR shall give not less than a two-week advance notice of proposed time for shutting down or interrupting any utility, service or facility, which may affect normal facility operations.
- D. The CONTRACTOR shall make all required notifications and obtain all permits including, but not limited to MassDEP, MassDLS, All associated costs and fees shall be paid for by the Asbestos Abatement SubCONTRACTOR and included in the base bid price.

3.2 RESPIRATORY PROTECTION SYSTEMS

- A. Provide all workers and authorized visitors with NIOSH approved respirators compliant with OSHA regulations and a sufficient quantity of disposable filters, so that workers can change filters during the workday. Store the respirator filters at the job site in the change room, and protect them from exposure to asbestos or other hazardous materials prior to their use.
- B. Workers shall always wear a respirator properly fitted on the face while within the work area enclosure and decontamination and bag/drum wash areas. Any worker failing to wear his/her respirator or in any way performing his/her work in an unsafe manner shall be restricted from working at this site.
- C. Instruct and train workers in proper respirator use.

3.3 PROTECTIVE CLOTHING

- A. Provide to all workers, foremen, superintendents and authorized visitors and inspectors protective disposable clothing consisting of full body coveralls, head covers, gloves and 18-inch high boot type covers or reusable footwear.
- B. Provide eye protection and hard hats as required by job conditions and safety regulations.
- C. Reusable footwear, hard hats and eye protection devices shall be left in the "Contaminated Equipment Room" until the end of the asbestos abatement work.
- D. All disposable protective clothing shall be discarded and disposed of as asbestos waste every time the wearer exits from the workspace to the outside through the decontamination facilities
- E. Provide all personnel throughout the abatement process with the specified protective clothing and gear. Ensure that all personnel entering and leaving the workspace use the following procedures:

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1. Entering from the outside: Change from street clothes into protective clothing and wear clean protective gear. Go through shower room into Dirty Equipment Room, pick up equipment and tools and enter the work area.
 2. Exiting from the Work Area: Dispose of all protective clothing into labeled plastic bags for asbestos waste. Do not take off the respirator, but still wearing the respirator enter the shower and shower thoroughly. Remove respirator and wash and wipe thoroughly to decontaminate the respirator. After drying, enter the Clean Room, store the decontaminated respirator in the assigned space and dress into street clothes.
 3. Post written procedures in the workplace and train all personnel on the procedures for the evacuation of the injured and the handling of potential fires. Provide aid to a seriously injured worker without delay for decontamination. Make provisions to minimize exposure of rescue workers and to minimize spreading of contamination during evacuations and fire procedures. Exceptions to normal, routine-exiting procedures shall be made for emergencies such as, but not limited to, serious personal injury and fires.
 4. The CONTRACTOR shall instruct all employees and workers in the proper care of their personally issued respiratory equipment, including daily maintenance, sanitizing procedures, etc.
- F. All respiratory equipment shall be inspected by CONTRACTOR's personnel at the beginning of each work period, including breaks and lunch periods.

3.4 GENERAL PREPARATION PROCEDURES

- A. Upon receipt of a Notice to Proceed, the CONTRACTOR shall meet at the Site with the Consultant to reach agreement on:
1. Scope and manner of work performance and all schedules.
 2. CONTRACTOR and supporting vendor vehicle access and parking.
 3. CONTRACTOR access to the work areas, including approved doors, stairways, and corridors.
 4. Location of water supply and wastewater drain connection points, if available.
 5. Determination of all equipment and other items to be removed from the work areas, and the location of temporary storage space, if applicable.
 6. Any other logistical factors to minimize interference with public safety and health, and other CONTRACTOR activities.
- B. Prepare each work area according to the following general sequence of procedures to ensure that proper fiber containment and protection systems are installed before any work, which could generate airborne asbestos fibers.
1. Erect barricades, post access restriction signs, seal all openings into the work area airtight

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(including doors, chases, shafts, and other vertical penetrations), and erect or install Decontamination Facilities and HEPA exhaust systems.

2. Install poly sheeting in the work zone. Perform pre-cleaning/surface decontamination where appropriate prior to installing protective poly sheeting.
3. Isolate and seal airtight with plastic and tape all HVAC system openings in the work area. All HVAC or exhaust systems within, or ductwork passing through, a fully contained removal air shall be inactivated (this does not refer to glove bag removal areas).
4. Obtain formal approval from Consultant of all preparation work and containment areas before commencing asbestos removal. The Consultant shall be given at least 48 hours notification of the intent to start removal work in any work area.
5. If saw cutting or any other method or device that renders roofing friable is utilized during asphalt-based, asbestos-containing roofing removal, then a negative air containment area must be erected.

D. Isolation of Electrical Systems

1. The scope of the electrical isolation work covers the protection of electrical equipment that is in areas where asbestos removal work is performed and where the water used for wetting the material before or during removal could possibly contact the equipment and create a hazard.
2. Provide portable electrical panels with ground fault protection for all non-battery power requirements. These panels shall have sufficient capacity for all HEPA exhausts and vacuums, power tools, portable lighting, and all other electrical needs.
3. Provide a licensed electrician to perform all electrical work including, but not limited to connecting, energizing, and de-energizing the electrical panels and to be on call to handle any electrical problem, which may arise during the course of the work.
4. All materials and workmanship shall comply with the latest editions of applicable codes, standards, and specifications.
5. Once a work area becomes isolated by containment, only weatherproof lighting and washable tools and equipment will be allowed in the area.

3.5 DECONTAMINATION FACILITIES

- A. Description - Any person or thing exiting from the work areas must pass through a Decontamination Facility consisting of three separate, adjacent rooms separated by curtained entrances, constructed in accordance with applicable regulations. Bulk non-friable asbestos waste, which was packaged in a clean environment, does not require decontamination in a shower. All containers passing through the Decontamination Facility must be cleaned thoroughly before exiting the facility.
- B. Construction - Decontamination Facilities shall be constructed and maintained as specified in applicable regulations and shall be located in areas approved by Consultant.

- C. Manner of Operation - All personnel shall enter the Clean Room, remove and store street clothes, and put on clean protective clothing and respirators; then enter the Equipment Room, put on any additional equipment, and enter the work area. All personnel exiting the work area shall enter the Equipment Room, remove and store or dispose of all contaminated clothing and shoes, shower, and then put on street clothing in the Clean Room. Respirators shall be worn into and cleaned in the shower, and dried and stored in the Clean Room.
- D. Wastewater Disposal - All water from the shower and cleaning hose shall be collected, pumped through a 5.0-micron filter, and then legally drained to points approved by the Consultant. The CONTRACTOR shall legally handle, transport, and dispose of all filtrant and solids.
- E. Cleaning - Decontamination Facility shall be cleaned using a HEPA-filtered vacuum at least once every shift, or more frequently, if needed, to prevent dust accumulation.
- F. Prohibitions - Smoking, drinking, or eating shall not be permitted in any work area or Decontamination Facility.

3.6 WORK AREA ISOLATION

- A. Preclean any fixed objects or equipment within the work areas by using HEPA-filtered vacuum equipment and wet washing except where air samples indicate concentrations of airborne fibers less than 0.010 f/cc and where there is no contamination of any surfaces; then enclose with minimum 6-mil plastic sheeting sealed airtight.
- B. At minimum, large areas, such as open elevator shafts, doorways, and stairwells, shall be sealed with two layers of 6-mil poly over plywood on 2" x 4" framing or approved alternative.
- C. Protect and isolate the work area for the duration of work by completely sealing off all openings and fixtures (including, but not limited to, floors, walls, heating and ventilation ducts, doorways, corridors, windows, and lighting) using plastic sheeting sealed securely in place. The work area shall be sealed airtight to the extent possible.
- D. Seal airtight all holes or other openings in the ceiling above and the floor below in each work area with poly sheeting.

3.7 AIR FILTRATION SYSTEM - FULLY ENCLOSED WORK AREAS

- A. Provide negative air filtration system in the work area to maintain a minimum negative pressure of 0.02 inch of water. If negative air pressure of 0.02 inches is lost, work shall be halted until the required negative air pressure is restored.
- B. The CONTRACTOR shall provide local exhaust ventilation in the work area to maintain a negative pressure in the work area relative to the adjacent non-work areas. The exhaust units must be equipped with a High Efficiency Particulate Air (HEPA) filter capable of retaining 99.97% of particulate matter greater than or equal to 0.3 microns in diameter. This filter must comply with ANSI Z9.2 standards. The fan for each unit should be sized to draw a desired airflow through the filters in the unit at a specified pressure drop. The unit should have an air-handling capacity of 1,000 CFM to 2,000 CFM. (under "clean" filter conditions).

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- C. High Efficiency Particulate Air (HEPA) air filtration equipment shall be equipped with visible and audible alarms that indicate the equipment is operating properly and when the air filtration media requires replacement and/or equipment requires servicing.
- D. The system created to maintain the specified negative air pressure differential shall be capable of providing a minimum of one air change every 15 minutes. Fifteen-minute air changes are mandatory during removal of asbestos-containing materials. All HRPAs exhaust units shall be vented outside the building.
- E. All air filtration units utilized on this project shall be delivered to the site in good condition with no visible debris and shall have intact HEPA filters installed with no holes, voids or gouges in the filters. Pressure differential across the filters shall be less than 0.02”.
- F. The air filtration system shall be operated on a continuous 24-hour basis throughout the abatement process through successful final air clearance testing and containment dismantling. The ventilation system shall be in accordance with EPA recommendations included in the “Guidance for Controlling Friable Asbestos-Containing Materials in Buildings”.
- G. No work will be allowed when the pressure differential in the work area is less than 0.02” relative to adjacent building areas.
- H. Employees should start removing the asbestos material at a location farthest from the exhaust units and work towards them. If an electric power failure occurs, removal must stop immediately and should not resume until power is restored and exhaust units are operating again.

3.8 WORK AREA EXHAUST

- A. Install one or more portable HEPA-filtered exhausts to maintain each work area, including the Decontamination Facility, under negative pressure, and to reduce airborne asbestos fiber concentrations.
- B. The exhaust(s) must be capable of providing at least an inward velocity through any unsealed openings, including the Decontamination Facility, of at least 100 fpm, and four full air changes per hour throughout the work area.
- C. All exhaust air shall pass through a HEPA filter before being discharged to the exterior of the building.
- D. Deficient air flows shall be immediately reported and work ceased until the situation is corrected.
- E. Exhaust system shall be operated constantly from the time that preparation is completed, until “clean air” certification is obtained.

3.9 APPROVAL OF CONTAINMENT AREAS

- A. After the work area has been prepared as specified, the CONTRACTOR shall request an inspection by City of Waltham’s Asbestos Monitor. No removal or disturbance of asbestos-contaminated materials or systems is to occur until the Consultant, has inspected and approved each separate prepared work area.

- B. Any deficiencies in the preparation work shall be promptly corrected in a manner satisfactory to the Consultant.

3.10 ASBESTOS REMOVAL PROCEDURES

- A. Demolition of block, concrete, plaster, gypsum board walls and ceilings, and other building materials, equipment and components to properly access and remove ACMs is part of the Asbestos Abatement SubCONTRACTOR's work. Selective demolition shall be performed in a controlled manner as to not affect ACMs or PACMs in ceilings, wall cavities and/or pipe chases. Debris generated during the selective exploratory demolition work shall be properly separated and removed prior to performing any asbestos abatement/removal. Selective demolition and exploratory demolition shall be required for the site building. Additional ACMs discovered in wall and ceiling cavities during this limited exploratory demolition shall be brought to the attention of the Consultant.
- B. The Asbestos Abatement SubCONTRACTOR shall remove all movable objects/items stored in the building unless otherwise specified. Non-porous items can be decontaminated and disposed of as conventional waste unless otherwise specified or regulated. Porous materials are to be disposed of as asbestos waste unless regulated or specified otherwise.
- C. Friable Asbestos-Containing Materials (Excluding Glovebag Removal):
 - 1. All asbestos-containing materials to be removed shall be contained within a negative pressure enclosure system, wetted with amended water and carefully removed to prevent droppage and creation of airborne dust.
 - 2. Once the removal of all asbestos-containing material is complete, all surfaces and walls within the area shall be thoroughly cleaned by wet wiping/cleaning, followed by thorough drying, and then HEPA vacuumed. A satisfactory encapsulant (lockdown material) shall be applied to all surfaces from which friable asbestos has been removed.
 - 3. The exterior of disposal bags, drums, and other containers shall be vacuumed and washed free of all visible asbestos fibers before their removal from the work area.
- D. Friable Asbestos-Containing Materials (Using Glovebag Removal Methods):
 - 1. All glovebag removal operations shall be conducted in accordance with 29 CFR 1926.1101 and applicable state regulations. Glovebags cannot be slid on pipes or reused.
- E. Nonfriable Asbestos-Containing Materials:
 - 1. If the CONTRACTOR and the Consultant determine, that the non-friable ACM can be removed without creating any airborne dust or loose friable asbestos, the specific practices listed herein shall be followed as approved in the CONTRACTOR's written work plan. Otherwise, the nonfriable asbestos must be removed under the conditions of a full negative-pressure enclosure.
 - 2. All non-friable asbestos removal areas shall be properly segregated by posting caution signs meeting the specifications of OSHA 29 CFR 1926.1101 at all locations and

approaches to any location where airborne concentrations of asbestos have potential to exceed ambient background levels. Workers shall don all protective equipment prior to entering the regulated work area. The material shall be removed very carefully to minimize any breakage that may release airborne fibers.

F. Asphalt-Based Roofing and Flashing Material Asbestos Removal

1. Operations involving the cutting or abrading of asphalt-based asbestos roofing material is considered to release sufficient friable material or fibers 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 modified if the CONTRACTOR uses slicing or shearing equipment or manual means to remove the asbestos materials and if the USEPA and state regulations and guidance documents on abatement of roofing materials are followed.
2. Removal of roofing material prior to general building demolition shall be performed in accordance with 29 CFR 1926.1101(g)(8)(ii). Additionally, removal shall meet all requirements specified in the DEP Policy Statement Concerning Non-Friable Asbestos Containing Materials, Policy #BWP-96-012 as approved in the CONTRACTOR's site specific Work Plan required in Section 1.11.
3. Work Procedures
 - a. Perform whatever procedures are necessary including the application of wet methods and covering materials to ensure that release of asbestos 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. The CONTRACTOR shall make every attempt to remove all asbestos roofing materials intact. If removal of roofing systems will render the material friable, then the material shall be removed using the full containment methodology unless a waiver for work practice variance is obtained from MassDEP.
 - e. All loose debris shall be immediately collected using HEPA-filter vacuums and/or wet cleaning methods. The vacuum debris and wipe materials shall be segregated, packaged, and disposed of 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 provided the asphaltic roofing material is not in a friable state. Waste must be lowered by a crane, hoist, excavator, or dust-tight chute, in accordance with applicable regulations.

G. Floor Coverings, Mastics and Floor Leveling Compounds

1. The CONTRACTOR shall remove all asbestos-containing floor coverings, including but not limited, to 9"x 9" floor tile, 12"x 12" floor tile, floor sheeting, mastics on wood, mastic on concrete, multilayered floor coverings, floor levelers and stair treads.
2. Asbestos-containing floor coverings and mastics requiring abatement exist throughout the building. Current building conditions vary from clean floors with accessible floor coverings to floor finishes covered with deteriorating building debris and equipment. If asbestos-containing floor tile adhesive is applied directly onto wood flooring, the Asbestos Abatement SubCONTRACTOR shall remove the wood contaminated by adhesive and disposed of contaminated wood as asbestos waste.
3. The CONTRACTOR shall remove and dispose of all asbestos-containing floor coverings, associated mastics, tar papers and floor levelers. The CONTRACTOR will encounter and shall remove floor coverings, etc. under the following conditions: ACM is under varying quantities of a) deteriorating non-asbestos wall & ceiling plaster, b) ceiling tile and paint debris, some of which is lead containing; c) under floor boards; d) under plywood; e) under building equipment (desks, chairs, shelving, cabinets, radiators, toilets, baseboard heating, etc.); f) under bird guano; g) under damaged thermal system insulation, h) on concrete, and i) on various wood underlayments. The CONTRACTOR is also responsible for the removal of cabinets and partition walls to access asbestos floor covering and adhesive mastic.
4. The CONTRACTOR shall eliminate all mastic remnants when positive. The CONTRACTOR shall remove all materials or substrates (i.e.: wood underlayments, floor levelers, etc.) if visible or microscopically detectable asbestos-containing mastic remains on these surfaces after abatement. The CONTRACTOR shall also remove as asbestos any non-asbestos mastics which are asbestos contaminated or become asbestos contaminated during asbestos abatement operations in that location.
5. The Abatement Schedule identifies areas where floor coverings, mastics and floor levelers exist. The abatement schedule also identifies type of floor covering, general location and approximate quantity. The CONTRACTOR shall remove specified floor coverings under all conditions. All work associated with floor coverings abatement shall be reflected in the lump sum bid.

H. Concealed TSI Pipe, Fittings, Valves and Debris

1. The Asbestos Abatement SubCONTRACTOR may encounter and shall investigate all areas of the building to locate concealed TSI pipe insulation, perform selective demolition to access all concealed TSI, remove and dispose of all TSI and contaminated porous building materials (or properly decontaminated thereof) and provide certification that all concealed TSI has been removed prior to demolition. If, during the course of demolition, TSI is found, the Asbestos Abatement SubCONTRACTOR shall access and abate TSI. Demolition activities will be suspended until the Consultant determines that identified TSI is successfully abated, however, demolition may be permitted to proceed in other locations where these ACMs will not be impacted.
2. The following are some examples of concealed areas that require abatement:
Behind and above non-ACM plaster reinforced with wire lathe walls and ceilings; behind

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sheetrock walls and above ceilings; under wood floors; within floor trenches or floor grates covered with steel plating or concrete covers; under deteriorated building debris; under non-ACM blown-in insulation; inside heating/HVAC units; behind ceramic tiled walls and ceilings; above suspended ceilings; above spline tiled ceilings; behind wood wall paneling; partially buried in soil, submerged in water; between floor spaces; etc. Concealed TSI covers virtually all piping systems. Concealed TSI is commonly found in vertical and horizontal pipe chases behind walls and ceilings of rooms, bathrooms, wet walls, janitor closets, etc. The CONTRACTOR is also responsible for removing as ACM all commingled concrete slurry or building materials where TSI is embedded or has come in contact with such material.

3. The abatement schedule provides approximate quantities of concealed TSI on a floor-by-floor or per building basis. The CONTRACTOR shall locate and remove these materials as part of the lump sum bid.

I. Encapsulation:

1. After all asbestos-containing material is removed, seal the surface with an approved encapsulation material. Encapsulation materials shall be applied after clearance visual inspection has been performed by City of Waltham's Asbestos Monitor. The CONTRACTOR shall inform the Consultant whenever any asbestos-containing materials cannot be removed, whether in total or in part prior to encapsulating.
2. The encapsulant shall be prepared and applied according to the manufacturer's specifications. A Material Safety Data Sheet (MSDS) must be submitted to City of Waltham and the Consultant for acceptance for the encapsulant prior to its use at the Project Site. A copy of the MSDS must be available to the workers and the workers shall wear appropriate personal protective equipment as designated on the MSDS during the preparation and application of the encapsulant.

J. Bulk Waste Management

1. If bulk demolition is utilized for abatement, The Consultant shall prepare the methodology to be used to protect human health and the environment during all phases of demolition, load-out, transport and disposal of all debris generated by the demolition and removal of the asbestos containing materials and contaminated building debris. This work plan will also be submitted to the MassDEP for approval. The CONTRACTOR shall obtain all required waivers, variances and exemptions from all applicable regulatory agencies since the demolition of the designated building will not be performed following conventional asbestos abatement, as is typically required.
2. City of Waltham's Asbestos Monitor will be performing continuous air monitoring around the perimeter of the designated building and areas during all phases of demolition, load out and cleaning. All samples will be analyzed at the Site using NIOSH Method 7400 or equivalent. PCM sample analysis will be performed within 2 hours of sample start time. If, at any time, air sample results (PCM Analysis) indicate airborne fiber concentrations in excess of 0.010 fibers per cubic centimeter of air, the CONTRACTOR shall stop work and the MassDEP will be notified. CONTRACTOR shall take direction from City of Waltham's Asbestos Monitor and/or the MassDEP regarding steps that must be taken to reduce the airborne fiber concentrations. Such steps may include working slower or more cautiously, additional wetting or other methods. The CONTRACTOR shall at all times

use methods that maintain airborne fiber concentrations below 0.010 fibers per cubic centimeter. All costs incurred for maintaining airborne fiber concentrations below 0.010 fibers per cubic centimeter or for maintaining approval of MassDEP during the demolition process shall be considered part of the work and the responsibility of the CONTRACTOR. If any PCM air samples result in elevated airborne asbestos fiber levels, the work practices and engineering controls described in the CONTRACTOR's work plan and being employed at the Site shall be reviewed and modified until acceptable airborne fiber levels are achieved.

3.11 WORK AREA CLEANUP, DECONTAMINATION AND WASTE DISPOSAL

A. General Requirements

1. After all asbestos-containing or asbestos-contaminated materials have been removed, remove all wastes and perform a final cleanup and decontamination of each work area. Final cleaning shall be performed only after all waste is packaged and removed, but before reinstalling or demolishing any equipment, or dismantling any barrier, Decontamination Facilities, or protective coverings. Cleaning shall be subject to the approval of City of Waltham's Asbestos Monitor based on a visual inspection, surface dust wipe tests (if necessary), and air testing.

B. Cleaning Methods and Approvals

1. All waste containers and removal equipment shall be thoroughly cleaned with a HEPA-filtered vacuum, decontaminated with the use of amended water, and then promptly removed from the work area.
2. All surfaces in the work area shall be thoroughly wiped/washed clean and, after drying, thoroughly decontaminated with a HEPA-filtered vacuuming device then encapsulated.
3. After cleaning, City of Waltham's Asbestos Monitor shall inspect the work area. To facilitate scheduling of inspections and air tests, the CONTRACTOR shall notify City of Waltham's Asbestos Monitor of the anticipated completion of the final work area cleaning at least 48 hours in advance.
4. If any visible waste or fibers are observed within the work area during the inspection, the CONTRACTOR shall perform additional cleanup and decontamination.
5. If the air sample results are above the Air Quality Standard of 0.010 f/cc as measured by PCM analysis, the CONTRACTOR shall perform additional cleaning and decontamination, and the inspection and air tests shall be repeated at the CONTRACTOR's expense
6. If the air sample results are below the Air Quality Standard of 0.010 f/cc, the Consultant shall give approval for the CONTRACTOR to remove all protective coverings, which do not comprise part of the work area seal, containment barrier, or Decontamination Facility.
7. Once these items have been properly packaged and removed from the work area as contaminated waste, package and properly dispose of all remaining plastic sheeting, disassemble and remove the Decontamination Facility and HEPA exhausts, and perform a

final HEPA vacuuming and/or wet cleaning of all surfaces.

8. Upon completion of the cleaning, all temporary access openings shall be repaired and all unsafe conditions corrected.

C. Waste Disposal

1. General Requirements - All asbestos wastes (e.g., caulk, floor tile, joint compound, etc.) must be handled, packaged, stored, transported, and disposed of as specified in this subsection, and in compliance with all federal, state, and local regulations and codes.
2. Waste Labeling - If waste containers are not already so preprinted, warning labels having waterproof print and permanent adhesive shall be affixed to the lid and/or sides of the containers, whether or not these containers are further packaged. Warning labels shall be conspicuous and legible, and conform to the latest OSHA, EPA and DOT labeling requirements.
3. Waste Packaging - All waste shall be thoroughly wetted when packaged and CONTRACTOR shall inspect each bag, drum or container to observe that water condensation is visible. Insufficiently wetted bags shall be opened, rewetted, and resealed inside a negative pressure enclosure. When a waste bag is full, it shall be securely sealed with tape, and then placed in the designated temporary storage area inside of the work area.

D. Waste Container Removal and Disposal Documentation

1. It is the responsibility of the CONTRACTOR to determine current waste handling, transportation, and disposal regulations for the work site and for each waste disposal landfill. The Consultant must approve the landfill destination. The CONTRACTOR must comply fully with these documents and all U. S. Department of Transportation and EPA requirements.
2. The CONTRACTOR, transporter and landfill shall document generation, transport and disposal of the waste at the designated landfill by completing a Waste Shipment Record and forwarding the original along with the Bill of Lading to City of Waltham within the 30-day time period specified by USEPA.
3. To comply with the requirement that waste disposal of an approved landfill be documented, CONTRACTOR shall remove waste containers from work areas under the observation of Consultant, and shall complete appropriate documentation for each load of waste removed from the site.
4. Measure the volume of each container or load of waste removed from the Site. The CONTRACTOR shall provide City of Waltham's Asbestos Monitor with an estimated total volume of each load/container of waste and provide an accurate count of each type of container for each load BEFORE the waste is removed from the Site
5. Provide legal transportation of the waste to the disposal landfill, and complete or obtain all required licenses, manifests, dump slips, or other forms. Proper truck placarding must be performed in accordance with USDOT regulations. Legible copies of all forms or licenses, and the signed original of the Waste Disposal Form (e.g., Asbestos Waste Shipment Record) for each waste load, shall be given to Consultant.

6. Waste may not be transported to and temporarily stored at a pre-approved off-site storage area owned by CONTRACTOR. All asbestos waste generated during this Project shall be secured onsite until shipping to the waste disposal facility. In addition, no asbestos waste generated from other sites not associated with this project shall be transported, stored, or shipped with asbestos waste generated from this Site.

3.12 MONITORING, TESTING AND INSPECTIONS

- A. All monitoring, with the exception of Asbestos Abatement SUBCONTRACTOR personnel monitoring, will be performed by City of Waltham's Asbestos Monitor. The CONTRACTOR is responsible for personnel monitoring in compliance with OSHA regulations. City of Waltham's Asbestos Monitor may, at his discretion, also conduct personnel monitoring on CONTRACTOR personnel. Monitoring by City of Waltham's Asbestos Monitor shall not relieve the CONTRACTOR of obligation to perform personal exposure assessments.
- B. The performance and execution of the work will be closely monitored throughout the abatement process and throughout the demolition process by City of Waltham's Asbestos Monitor. The monitoring will be inside the work areas, demolition sites and the surroundings to ensure full compliance with these specifications and all applicable regulations. The CONTRACTORS shall provide cooperation and support to City of Waltham's Asbestos Monitor throughout the abatement and demolition process. The continuous monitoring and checking may include air samples in the workspace, personnel samples at breathing levels for a number of workers to be determined solely by the City of Waltham's Asbestos Monitor, air samples in the areas surrounding the work area and the outside, checking of the Standard Operating Procedures, Engineering Control System, Respiratory Protection System, labeling, packaging, transporting and disposal of asbestos, Decontamination Facilities and procedures and any other aspects of the abatement process that may impact the health and safety of the public or the pollution of the environment. The continuous monitoring and checking is further intended to document type and quantities of ACM removed and to document the CONTRACTOR's compliance with regulations and the Contract Documents.
- C. The CONTRACTOR is responsible for meeting OSHA requirements for their personnel, including but not limited to, monitoring requirements, safety compliance and record keeping. Personal monitoring results from the previous day shall be posted each day, and legible copies of the results forwarded to City of Waltham's Asbestos Monitor.
- D. Final Clearance air sampling will be performed by Phase Contrast Microscopy in accordance with MassDLS protocols in work areas where clearance sampling is required.
- E. If the concentration of all the air samples taken inside the work area, as analyzed by the PCM method described in 453 CMR 6.00, does not exceed 0.010 fibers per cubic centimeter of sampled air (f/cc), the removal shall be considered complete and the containment area dismantled.
- F. If the concentration of any of the air samples taken inside the work area exceeds 0.010 f/cc, then the Asbestos Abatement SubCONTRACTOR shall re-clean the work area and final air clearance testing shall be repeated. All costs associated with the collection and analysis of repeat air clearance samples due to elevated clearance fiber levels shall be paid for by the CONTRACTOR.

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- G. The Asbestos Abatement SubCONTRACTOR shall not start containment dismantling operations until the Asbestos Abatement SubCONTRACTOR has received written approval from City of Waltham's Asbestos Monitor.

3.13 FINAL INSPECTION AND TESTING

- A. After thorough cleaning and removal of all asbestos waste and CONTRACTOR's materials, tools and equipment, the Asbestos Abatement SubCONTRACTOR's Asbestos Supervisor shall perform an initial inspection of the work area to determine if it is ready for a final visual inspection by City of Waltham's Asbestos Monitor. Once the Asbestos Abatement SubCONTRACTOR has determined that the containment or regulated work area is ready for the final visual inspection, City of Waltham's Asbestos Monitor shall be notified no less than 24 hours in advance to schedule and perform the required final inspection and final clearance air testing. City of Waltham's Asbestos Monitor will visually inspect the workspace for the detection of any visible debris, dust, residue or contamination. The visual inspection shall be performed prior to applying lockdown encapsulation to surfaces. All surfaces shall be dry to beginning the visual inspection.
- B. Following a successful visual inspection of the work area the Asbestos Abatement SubCONTRACTOR shall encapsulate all surfaces within the work area. Following encapsulation of the work area and after a sufficient period of time has elapsed to allow complete drying of the work area, the final clearance air sampling will be performed by City of Waltham's Asbestos Monitor.
- C. The final testing shall take place under active agitation of the air in the workspace with fans running, leaf blowers operating and any other means found suitable by City of Waltham's Asbestos Monitor during the final testing. Fans, leaf blowers and extension cords necessary for final clearance air testing shall be provided by the CONTRACTOR and the CONTRACTOR shall cooperate with and assist City of Waltham's Asbestos Monitor. The analysis of all samples collected shall demonstrate that fiber levels do not exceed 0.010 f/cc by PCM.
- D. After the specified post-abatement levels have been confirmed through the final testing specified herein, the plastic enclosure shall be removed, the exposed surfaces thoroughly wet cleaned and/or HEPA vacuumed, and the plastic, tape, material from equipment room and shower room bagged and disposed of as asbestos waste. A final check will be carried out by City of Waltham's Asbestos Monitor to ensure that no dust or debris remain on surfaces as the result of asbestos removal and related activities and containment dismantling operations. Critical barriers, HEPA exhaust units and decontamination facilities shall remain in place until all final cleaning and clean-up operations have been completed and all other containment dismantling has been completed.
- E. After achieving the level of cleanliness and decontamination as specified herein and as confirmed by the final testing and checking, the City of Waltham's Asbestos Monitor will thoroughly inspect the work areas jointly with the Asbestos Abatement SubCONTRACTOR to determine whether any damage has been done to any building component, finish, equipment or any other part of the work space or property that will not be subsequently demolished or have been specifically designated for salvage. A final inspection report shall be prepared jointly between City of Waltham's Asbestos Monitor and the CONTRACTOR detailing the list of items to be fixed by the CONTRACTOR.

END OF SECTION

SECTION 026000

MISCELLANEOUS HAZARDOUS MATERIALS REMOVAL

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of Article III, Paragraph 1 of the CONTRACT AND GENERAL CONDITIONS.

1.2 DESCRIPTION OF THE WORK

- A. The CONTRACTOR shall provide labor, materials, and equipment to complete the work specified in this Section including, but not limited to, the removal and lawful disposal of hazardous materials, hazardous wastes, and special wastes. Generally, the management of miscellaneous hazardous materials shall include, but not be limited to:
 - 1. Characterization (any testing that may be required by a disposal facility), removal, and disposal of hazardous materials or potentially hazardous materials.
 - 2. Characterization (any testing that may be required by a disposal facility), removal, and disposal of fluorescent light ballasts, capacitors, and transformers throughout all site buildings and structures to be demolished
 - 3. Characterization (any testing that may be required by a disposal facility), removal, and disposal of building systems fluids, containerized wastes, contained gear oils, hydraulic oils and refrigeration liquids, etc. from various pieces of machinery and equipment, throughout all site buildings and structures to be demolished.
 - 4. Characterization (any testing that may be required by a disposal facility), removal, and disposal of all containers, drums, and unknown materials throughout all site buildings and structures to be demolished.
 - 5. Characterization (any testing that may be required by a disposal facility), removal, and disposal of loose paint chips and flaking and peeling paint from walls and floors throughout all site buildings and structures to be demolished.
 - 6. 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 departments having jurisdiction.

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7. Perform all sampling and testing required to properly profile the material for waste disposal. This shall also include all testing required by the disposal or recycling facility.
 8. All costs for the testing shall be borne by the CONTRACTOR.
 9. Comply with the CONTRACTOR's submitted Health and Safety Plan.
- B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 017418 – DEMOLITION WASTE MANAGEMENT AND DISPOSAL
 2. Section 024100 – BUILDING AND ANCILLARY STRUCTURES DEMOLITION
 3. Section 025000 – ASBESTOS ABATEMENT AND RELATED WORK
- C. Refer also to the attached hazardous materials inventory for information related to hazardous materials that are/may be present and require removal prior to demolition.

1.3 SCHEDULING AND SEQUENCING

- A. The CONTRACTOR and the Consultant shall develop a hazardous materials removal schedule for each phase of the work at the Pre-Construction Conference. The Consultant or the City of Waltham may choose to alter the work sequence as they see fit.
- B. The CONTRACTOR shall update the schedule and submit any schedule changes for review by the Consultant at the weekly construction meetings.

1.4 LOCATION OF WORK

- A. Location of work areas, descriptions, estimated types and quantities of hazardous materials are described in the HAZARDOUS WASTE SCHEDULE appended hereto. If additional hazardous materials are encountered, the CONTRACTOR shall notify City of Waltham immediately and be prepared to remediate the material.
- B. The HAZARDOUS WASTE SCHEDULE identifies hazardous materials encountered and enumerated during the survey. The quantities are provided for general guidance and may not correspond exactly to the quantity to be removed. The CONTRACTOR is responsible to investigate all structures for the presence of all hazardous materials. The CONTRACTOR shall determine quantities of hazardous materials for bidding purposes. Not all hazardous materials, building systems fluids and containerized wastes are included in the Hazardous Materials Inventory Table. The Contractor is responsible for field verification, removal, and proper disposal of all items prior to building demolition.
- C. Handling, containerizing, packaging, re-handling, hauling and disposal of all items identified are to be included in the lump sum bid item of the Contract.

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1.5 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 1910.146 "Permit Required Confined Space"
- e. 29 CFR 1910.1025 "Lead"
- f. 29 CFR 1910.1200, "Hazard Communication"
- g. 29 CFR 1926, "Safety and Health Regulations for Construction"
(Construction Industry Standards)
- h. 29 CFR 1926.62, "Lead-Construction"
- i. 40 CFR 50, "National Primary and Secondary Ambient Air Quality Standards"
- j. 40 CFR 60, "Standards of Performance for New Stationary Sources,"
Appendix B, "Test Methods"
- k. 40 CFR 117, "Determination of Reportable Quantities for Hazardous Substances"
- l. 40 CFR 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System"
- m. 40 CFR 172, "Hazardous Waste Transportation"
- n. 40 CFR 261, "Identification and Listing of Hazardous Waste"
- o. 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste"
- p. 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"
- q. 40 CFR 268, "Land Disposal Restrictions"

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- r. 40 CFR 300, “National Oil and Hazardous Substances Pollution Contingency Plan”
- s. 40 CFR 302, “Designation, Reportable Quantities, and Notification”
- 2. Occupational Safety and Health Administration OSHA Booklet 3126 “Working with Lead in the Construction Industry”
- 3. National Institute for Occupational Health and Safety
 - a. NIOSH Method 7082, “Lead”
- 4. American Society for Testing and Materials
 - a. ASTM D3335, “Test Method for Low Concentration for Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy”
- 5. EPA (Environmental Protection Agency) 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. Steel Structures Painting Council
 - a. SSPC Guide 61 (CON) Guide for Containing Debris Generated During Paint Removal Operations
 - b. SSPC Guide 71 (DIS) Guide for the Disposal of Lead Contaminated Surface Preparation Debris
- 7. Commonwealth of Massachusetts Department of Environmental Protection
 - a. 310 CMR 40 Massachusetts Contingency Plan
 - b. 310 CMR 30 Hazardous Waste Regulations
 - c. 310 CMR 1-7 Clean Water Act
 - d. 310 CMR 16, 19 Solid Waste Regulations
 - e. 314 CMR 7-8 Clean Air Act
- 8. Other
 - a. 454 CMR 10-23 Division of Industrial Safety

1.6 SUBMITTALS

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- A. The CONTRACTOR shall submit each item in this Article according to the Conditions of the Contract, for information only, unless otherwise indicated.
- B. The CONTRACTOR shall submit a Waste Management Plan for review by the Consultant and City of Waltham. The Plan shall include identification of the proposed waste hauler and disposal facility with copies of all applicable licenses, registrations and approvals.
- C. The CONTRACTOR shall provide copies of all worker certifications associated with OSHA 40 Hour Hazardous Waste Site Health and Safety Training in accordance with 29 CFR 1910.120.
- D. The CONTRACTOR shall provide City of Waltham with all required documentation relating to the proper removal and disposal of any hazardous or regulated waste that leaves the site in accordance with the Waste Management Plan.
- E. After completion of the hazardous materials removal, provide a final report documenting removal, transportation and disposal activities. The document shall include copies of manifests, shipping slips, permits, and licenses for this Project.

1.7 QUALITY ASSURANCE

- A. Examination of Existing Conditions: The Contractor shall examine the Contract Drawings for hazardous waste identification, handling, removal, and disposal requirements and provisions for new work.
- B. Hazardous Waste Removal and Transportation Firm Qualifications: An experienced firm that has specialized in hazardous waste work similar in material and extent to that indicated for this Project.
- C. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- D. Regulatory Requirements: Comply with governing EPA and DEP notification regulations before beginning removing any hazardous waste materials. Comply with hauling and disposal regulations of authorities having jurisdiction

PART 2 – MATERIALS

2.1 PROTECTIVE EQUIPMENT

- A. Provide health and safety equipment required to protect workers and to comply with the Health and Safety Plan.

2.2 DISPOSAL BAGS

- A. Disposal Bags: Provide 6 mil (0.15 mm) thick leak-tight polyethylene bags.

2.3 DRUMS

- A. DOT Hazardous Waste Disposal Drums: Provide DOT 17-H Open -Top Drums (55 gallon) in accordance with DOT regulations title 49 CFR Parts 173, 178, and 179.

2.4 LABELS

- A. DOT Hazardous Waste Labels: in accordance with DOT regulations, Title 49 CFR parts 173, 178, and 179.

PART 3 – EXECUTION

3.1 GENERAL WORK AREA SET UP

- A. Signage: Prior to the preparation for work that will disturb hazardous materials, the Contractor shall place warning signs immediately outside all entrances and exits to the area.
- B. Access to Work Areas: The Contractor shall allow only authorized personnel into the work area. Barrier tape shall be used to limit access to the exterior work area.

3.2 GENERAL HAZARDOUS WASTE MANAGEMENT

- A. Do not mix potentially hazardous waste streams. Where feasible, separate each type of hazardous waste from other types of hazardous wastes, from asbestos waste and from construction waste.
- B. Segregate, package, label, transport and dispose of Hazardous Waste in accordance with DOT, EPA, State and Local regulations.
- C. The Consultant shall identify materials considered to be hazardous wastes based on TCLP testing of components completed by the Consultant prior to initiating this project. A schedule of materials that must be managed as hazardous waste is attached in Table 2.

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- D. The following wastes are designated as Hazardous Wastes and are non-salvageable:
1. Waste Type A PCB waste to include PCB-containing ballasts from fluorescent light fixtures.
 2. Waste Type B Mercury-containing waste to include thermostats and temperature gages with mercury switches, fluorescent, and mercury-vapor lamps.
 3. Waste Type C lead base paint debris to include containers of paint and paint chips/debris.
 4. Waste Type D characteristically hazardous metal containing waste to include soot, ash and debris inside the boilers.
 5. Waste Type E HVAC and refrigerator refrigerant.
- E. In the event of an apparent conflict between the requirements of these specifications and the requirements of the Massachusetts Hazardous Waste Regulations (310 CMIR 30.000) the CONTRACTOR shall bring the apparent conflict to the attention of the Consultant for resolution. The CONTRACTOR shall not seek to review the apparent conflict with other parties prior to resolution with the Consultant.

3.3 HAZARDOUS WASTE PACKAGING AND LABELING

- A. Package each segregated Hazardous Waste Type A, B, C, D and E in separate specified containers as follows. **IMPORTANT: Do Not Mix Waste Streams:**
1. Waste Type A to be packaged in DOT 17-H open-top drums. Fill to capacity only with Waste Type A (Do Not Mix Waste Stream types). Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Waste Polychlorinated Biphenyls, 9, UN-2315, PG-II, (M001). Adjacent to each label, enter the date indicating when waste was first placed in each drum.
 2. Waste Type B to be packaged in DOT 17-H open-top drums with polyethylene disposal Bag liners. Fill liner bags only with Waste Type B (do not mix waste stream types). After full, neck liner bags down into DOT 17-H open-top drum and seal with duct tape. Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Hazardous Waste Solid, NOS, 9, NA3077, PG-III, (D009). Adjacent to each label, enter the date indicating when waste was first placed in each drum.
 3. Waste Type C to be packaged in DOT 17-H Open-Top Drums. Fill to capacity only with Waste Type C (do not mix waste stream types). Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Hazardous Waste Solid, NOS, 9, NA3 077, PG-III, (~D009). Adjacent to each label, enter the date indicating when waste was first placed in each drum.

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4. Waste Type D to be packaged in DOT 17-H open-top drums. Fill to capacity only with Waste Type D (do not mix waste stream types). Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Hazardous Waste Solid, NOS, 9, NA3077, PG-III, (D009). Adjacent to each label, enter the date indicating when waste was first placed in each drum.
 5. For Waste Type E, HVAC, cooling system fluids, and refrigerator refrigerant shall be reclaimed for recycling from each unit by an EPA licensed contractor. The refrigerant shall be reclaimed using evacuation gas containers and submitted for recycling in accordance with the EPA Clean Air Act, Stratospheric Ozone Protection Regulations.
- B. Maintain all containers in a continuously sealed condition after they have been filled. Do not reopen sealed containers or place additional waste in previously sealed containers.

3.4 LIGHT BALLASTS

- A. Light ballasts requiring removal were observed throughout the Site.
- B. Remove, characterize and lawfully dispose to an appropriate off-site PCB disposal facility all PCB and non-PCB light ballasts throughout the facility. In preparing his/her bid, the CONTRACTOR shall assume all light ballasts contain PCBs.
- C. Document all disposal activities to insure compliance with regulations. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.
- D. All light ballasts shall be removed by properly trained personnel in accordance with local, state, and federal regulations and all material shall be disposed of (i.e. recycled) by a disposal contractor who possesses at least one (1) year experience in the "Lighting Waste Recycling Industry".

3.5 MERCURY

- A. Under current federal regulations, items containing mercury may be classified as hazardous waste. These include, but are not limited to fluorescent lamps, high-intensity discharge lamps, manometer thermostats and relay switches. The following shall be followed for disposal of all mercury items:
 1. Collection, characterization and proper disposal of all fluorescent tubes and mercury items found throughout the facility.
 2. Care must be taken to not break these items, as that may cause mercury exposure to individuals handling them and may require additional clean-up and decontamination.
 3. All materials leaving the site shall become the property of CONTRACTOR.

MISCELLANEOUS HAZARDOUS MATERIALS REMOVAL

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4. Provide all waste shipment records or recycling records and incorporate in the final report.
- 3.6 HAZARDOUS MATERIALS/CONTAINERIZED WASTE
- A. All hazardous materials shall be characterized and disposed of in accordance with applicable regulations. Disposal manifests shall be provided for all waste disposal.
 - B. 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.
 - C. Any hazardous materials containers in poor condition shall be removed as soon as possible.
 - D. Handling Hazardous Waste
 1. Place waste in DOT approved containers and label the containers for transport to a licensed disposal site.
 2. Use an authorized hazardous waste transporter to haul waste to a hazardous waste facility.
 3. Follow all record keeping, chain-of-custody and reporting requirements including a copy of the hazardous waste manifest.
 4. Accurately measure and weigh the volume of each container or load of waste removed from the site. Submit records of waste volumes to City of Waltham and the Consultant.
 5. 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.
 6. Paint debris shall not be placed on the unprotected ground and shall be shielded to prevent dispersion of the debris by wind or precipitation.
 7. Provide appropriate notifications to regulatory agencies if there is a release to the environment exceeding the CERCLA reporting requirements (e.g. lead - 1 pound).
 8. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.
 9. Provide legal transportation of the waste to the disposal landfill, and complete or obtain all required licenses, manifests, landfill slips, or other forms. Copies of all forms or licenses, and the signed original of the Waste Manifest for each waste load, shall be given to the Consultant and City of Waltham.

3.7 LEAD-BASED PAINT

- A. Lead-based paint is present on many surfaces throughout the Site. The CONTRACTOR shall assume that all painted surfaces contain lead-based paint. Any of the CONTRACTOR activities that may generate leaded dust or impact a leaded surface shall be responsible for regulating his work area so that dust migration is contained properly within the regulated area. Once the work is complete, the CONTRACTOR shall be responsible for the proper clean up and disposal of leaded dust and materials.
- B. All lead based paint work must be reflected in the lump sum bid of this contract.
- C. Work Areas 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 or stripping or abrasive methods shall occur on painted surfaces without the use of HEPA vacuum attachments.
 - 2. No demolition activities may occur that increase the workers' exposure above the Action Level of $30 \mu\text{g}/\text{m}^3$. CONTRACTOR shall fully comply with the OSHA lead standard at 29 CFR 1926.62.
 - 3. Workers shall be informed of the components to be 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.
 - 5. Separation of Trades: Unprotected, untrained workers or trades shall not perform any related work within the same vicinity as demolition involving components identified as containing lead.
 - 6. Cleanup Activities: The CONTRACTOR shall maintain the demolition work zones free of accumulated debris and materials containing lead.
- G. Disposal of Lead Contaminated Material.
 - 1. The CONTRACTOR must comply fully with SSPC – Guide 71 (DIS) as well as all current regulations concerning the testing, handling, hauling, labeling, and disposal of all lead paint waste generated during this project.
 - a. At a minimum, the CONTRACTOR shall collect and submit samples for Toxicity Characteristic Leaching Procedure (TCLP) Method 1311 in accordance with Appendix II of 40 CFR 261 to a Massachusetts Certified Laboratory. The CONTRACTOR shall collect at least four samples from each media scheduled for disposal.

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- b. All painted or coated building components shall be disposed of off site, including brick and concrete.
- c. All visible paint and painted debris shall be removed from the ground within and surrounding the work site prior to building demolition. All material shall be properly disposed of off-site.
- d. Lead-containing material that exceeds the TCLP criteria shall be disposed in accordance with applicable hazardous waste regulations.

3.8 REFRIGERANT

- A. Collect and analyze refrigerant samples, as necessary, to identify system gases from all refrigerant-containing vessels and systems. These systems include, but are not limited to, HVAC systems, air conditioners, refrigerators, and water coolers.
- B. Evacuate all refrigerant-containing vessels and systems using a vacuum pump. Furnish and install all necessary valves and fittings required to capture and collect the refrigerant in DOT-approved recovery cylinders or drums. Properly label all recovery cylinders and drums
- C. 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.
- D. After removal of refrigerants, tanks, vessels, piping, white goods, and other items shall be disposed of in accordance with applicable regulations. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

3.9 MACHINERY FLUIDS AND POWER PLANT SYSTEMS FLUIDS

- A. Drain all equipment containing hydraulic fluids, lubricating oils, fuel oil, antifreeze, and all other types of fluids. Decontaminate all systems, including piping, by means of steam cleaning or triple rinsing, or both, with a compatible fluid to remove all visible contamination.
- B. Collect and drum all fluids, including decontamination fluids drained from the above described equipment.
- C. Label drums for transport and disposal.
- D. After removal of all hazardous components, dispose of remaining equipment carcasses and piping in accordance with applicable regulations. The CONTRACTOR shall submit documentation verifying removal, transportation, and disposal at the approved disposal facility.
- E. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

3.10 WHITE GOODS AND OTHER ITEMS

- A. Remove and properly dispose of all environmentally hazardous items and systems components installed in white good item before proper disposal of the unit. This work includes, but is not limited to:
 - 1. Water coolers.
 - 2. Air conditioners.
 - 3. Refrigerators.
- B. White good items which do not contain environmentally hazardous materials, and white good item carcasses from which the CONTRACTOR has removed environmentally hazardous materials prior to removal from the building, shall be removed, transported and disposed of at an approved facility(ies).
- C. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

3.11 REMOVAL OF TRANSFORMERS

- A. All transformers shall be handled with appropriate personal protective equipment. Unless otherwise noted, the CONTRACTOR, shall assume that all unmarked transformers contain oil with >500 ppm PCBs.
- B. Prepare each transformer to be electrically disconnected in compliance with the National Electrical Safety Code, the National Electric Code, and OSHA regulations.

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- C. Transformers labeled “dry-type” shall be handled and disposed of as white goods, in compliance with 310 CMR 19.017, Waste Control.
- D. Transformers identified as not containing PCBs or labeled “No PCBs” shall be drained, if necessary, and shall be marked with green paint. The fluid shall be placed in properly sealed drums and painted green, and shall be sampled and analyzed by the CONTRACTOR, as required, for transportation and disposal purposes.
- E. Each transformer not positively identified as containing “No PCBs” shall be sampled in place to determine the concentration of PCBs prior to any removal activities, as required for transportation and disposal purposes.
- F. Before sampling transformers, the CONTRACTOR shall take the following preparatory and precautionary measures. These measures shall remain in effect for the duration of the transformer sampling and removal process.
 - 1. Cover and seal all drains, manholes, and other openings that may lead to waterways in such a manner to prevent any migration of the contaminants.
 - 2. Provide temporary containment designed to contain the entire contents of the fluid to be removed. This containment shall encompass the transformer and any areas designated for temporary storage. In addition, absorbents in the amounts adequate to absorb a spill from one complete equipment failure shall be placed within the containment area.
 - 3. Provide adequate spill cleanup equipment within the containment area.
- G. The laboratory proposed by the CONTRACTOR shall be certified for such analyses by the Commonwealth of Massachusetts, and shall be capable of demonstrating skill and experience in similar projects. The laboratory shall forward copies of all reports and technical correspondence directly to the Consultant. All reports shall completely and positively identify each transformer sampled.
- H. Following the disconnection of the electrical power source, pump PCB fluids in place from the equipment into specified containers before moving to minimize the accidental release of fluids. The PCB-filled type of electrical equipment is not intended for use as transport vessels and, therefore, must be drained of fluids before removal and transport. Following draining and drumming of fluids, transformers shall be move from the existing location to the loading area where they will be loaded onto a truck and transported to the disposal facilities. Each drum shall be properly labeled and sealed.
- I. Any transformers identified shall be marked with paint as follows:
 - 1. Green: No PCBs.
 - 2. Red: Containing PCBs.
- J. Transformers shall then be ready to be moved and transported to the applicable disposal facility.

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- K. Unless otherwise indicated on the plans, all transformers are to be removed and disposed of by the CONTRACTOR in accordance with the applicable laws and regulations. The CONTRACTOR shall assume that all transformers identified contain oil with concentrations of PCBs greater than 500 ppm.

3.12 FIRE EXTINGUISHERS

- A. Fire extinguishers may contain corrosive agents (monoammonium phosphate, ammonium phosphate) and may be reactive in water.
- B. De-pressurize prior to disposal.
- C. Fire extinguishers and their contents shall be landfilled in accordance with regulatory requirements. Do not discharge to the ground or to surface water. Do not cross contaminant with other fire extinguisher agents.
- D. Submit proof of disposal to the Consultant.

3.13 TEMPORARY STORAGE

- A. Partially filled containers of hazardous waste may be stored at the work site for intermittent packaging provided that:
 - 1. Each container is properly labeled when it is first placed in service;
 - 2. Each container remains closed at all times except when compatible waste types are added; and
 - 3. When moved from site to site, each container remains within the geographic boundaries of the facility without moving or crossing public access highways.

3.14 TRANSPORTATION, DISPOSAL AND/OR RECYCLING OF HAZARDOUS WASTES

- A. Continuously maintain custody of all hazardous material generated at the work site. Provide security, short-term storage, transportation and disposition until custody is transferred to an approved properly permitted disposal site or recycling center. Document continuous chain-of custody.
- B. Do not remove, or cause to be removed, hazardous waste from the property without a legally executed Uniform Hazardous Waste manifest.
- C. At completion of hauling and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to the Consultant.
- D. Recycling and Recovery: Turn over waste that contains materials for which recovery and/or recycling is possible to an approved recycling center. Materials subject to

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recycling include:

1. Fluorescent light tubes.
2. Thermostats with mercury switches.
3. Lead acid batteries
4. Refrigerant

3.15 DISCOVERY OF HAZARDOUS MATERIALS

- A. If hazardous materials, such as chemicals, or other hazardous materials are discovered during the course of the work other than those identified in the Plans and Specifications, cease work in affected area only and immediately notify the Consultant and City of Waltham of such discovery. Do not proceed with work in such areas until instructions are issued by the Consultant. Continue work in other areas.
- B. If unmarked containers are discovered during the course of the work other than those identified in the plans and Specifications, cease work in the affected area only and immediately notify the Consultant and the City of Waltham of such discovery. Do not proceed with work in such areas until instructions are issued by the Consultant. Take immediate precautions to prohibit endangering the containers integrity. Continue work in other areas.

END OF SECTION

HAZARDOUS MATERIALS INVENTORY

Material Description (Hazard)	Material Location	Estimated Quantity
Fire Exit Signs	Throughout Interior	5 Units
Fire Extinguishers	Throughout Interior	5 Units
Pull Stations	Throughout Interior	18 Units
Hydraulic Door Arm	Throughout Interior	4 Units
Emergency Fire Lights	Throughout Interior	20 Units
Thermostat	Throughout Interior	3 Units
Light Bulbs	Throughout Interior	158 Units
Light Ballasts	Throughout Interior	74 Units
Smoke Alarms	Throughout Interior	18 Units
Computer Monitors	Basement	4 Units
Batteries	Basement	2 Units
X-ray Machine	1 st Floor	1 Unit
Fixer/Developer	1 st Floor	5 Gallons
Dental Chair Hydraulics	1 st Floor	3 Units
Refrigerators	2 nd Floor	7 Units
Microwaves	2 nd Floor	2 Units
Air Conditioner	2 nd Floor	1 Unit
A/C Condensing Units	Exterior	3 Units