The City of Waltham

Invites
Interested Parties
To propose the best Proposal
For the service or product herewith described:

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

Proposal Due: 10:00 AM on November 8, 2018

Pre-Bid Meeting & Site Inspection: 10:00 AM October 31, 2018.
(Meet at 509 Moody Street)

Last day for written questions: 12:00 Noon November 9, 2018
(via email only to jpedulla@city.waltham.ma.us)

CITY OF WALTHAM

REQUEST FOR PROPOSALS for the ABATEMENT & DEMOLITION of the YOUNG BUILDING, 509 MOODY STREET WALTHAM, MASSACHUSETTS

I. INTRODUCTION

The City of Waltham shall demolish this building to make room for the construction of a new Moody Street Fire Station.

The site at 509 Moody Street has been under the management and control of the Waltham Housing Department for many years. The ground floor of the building was occupied by commercial tenants; while the top floors were rented to qualified low income people.

The City is seeking to abate and demolish the building, remove some ancillary pavement, fixtures and signs on the site and the fence between 509 and 533 Moody Street.

Environmental studies were undertaken by EFI Global. The full report is found in appendix A.

II. SCOPE OF SERVICES

The successful bidder will be required, at its sole cost and expense, to:

1. Obtain any and all permits to demolish the building, fence and any ancillary fixtures. City Fees are waived
2. Obtain any and all approvals from utility companies to disconnect any utilities to or from the building.
3. Do any and all filings, if required by any local, state or federal authorities.
4. Secure the site in a safe manner.
5. Pre-bait the site for rodents prior to the demolition and/or excavation.
6. Perform any environmental abatement, if necessary, to take down the building, fence, Ancillary fixtures, etc.
7. Remove and properly dispose of any and all construction debris and pavement.
8. Leave the site in a clean condition.
9. All functions related to the demolition of the building will be the responsibility of the Successful bidder.

III. QUALIFICATIONS

Licensed building contractor, proof of demonstrated experience with building demolition and abatement.

IV. REQUIRED SUBMISSION

1. General Liability insurance in the amount of $ 3,000,000.00, worker's comp and Automobile insurance.
2. Name, address and contact information of all MA governmental units to which the Proposer has provided similar projects.
3. The name, address, contact person's name and telephone number of all private sector clients to which the proposer has provided similar demolition consulting services and a brief synopsis of the services provided, including contract dates.
4. Resumes of key personnel who will be interacting with the City including a statement of professional experience, qualifications and education together with a report of specific experience related to the scope of services.
5. A Plan of Services detailing specifically how the proposer will complete the Scope of Work.
6. A completed Certificate of Non-Collusion.
7. A complete Certificate of Tax Compliance.
8. Corporation Vote Authorization, Corporation Identification and Non-Collusion Certificate.
9. The project shall be **completed 90 days** from the date of the Notice –to-Proceed.

A complete Environmental Test and report was completed by EFI global September 4, 2018. (see appendix A)

Proposals will be received at the Office of the Purchasing Agent, 610 Main Street, Waltham, MA 02452 until 10:00 AM, on November 8, 2018.

A pre-Bid meeting and site inspection will be held at 10.00 AM, October 31, 2018.
Two (2) copies of the Demolition Services Proposals shall be submitted in sealed envelopes with Proposer's name and clearly labeled "Demolition Services Proposals for Building located at 476-486 Main Street, fence and ancillary fixtures."

The proposals will be evaluated based upon price. Draft contract attached.
All proposals must comply with Chapter 149 of Massachusetts General Laws. All proposals are subject to funding. The City reserves the right to accept or reject any or all proposals and to make awards as it determines to be in the best interest of the City.

Any questions pertaining to this Request for Proposal are to be directed to Joseph Pedulla MCPPO, CPM, Purchasing Agent, City of Waltham, City Hall, 610 Main Street, Waltham, MA 02452, Tel. 781-314-3244, Email: jpedulla@city.waltham.ma.us.

VII. PREVAILING WAGES

The Contractor is required to pay the prevailing wages as determined under the provisions of Chapter 149, Sections 26 and 27D of the Massachusetts General Laws, including the submission of weekly payrolls to the awarding authority. The prevailing wage schedule is too large to attach here. It can be found in the City of Waltham website at www.city.waltham.ma.us/bids.

VIII. BRIEF HISTORY, 509 – 517 Moody Street

The 1897 real estate map shows a wood building (yellow) at the corner of Maple and Moody, then numbered 265 Moody Street. The 1900 map shows that the owner was listed as C. Mann. Moody Street

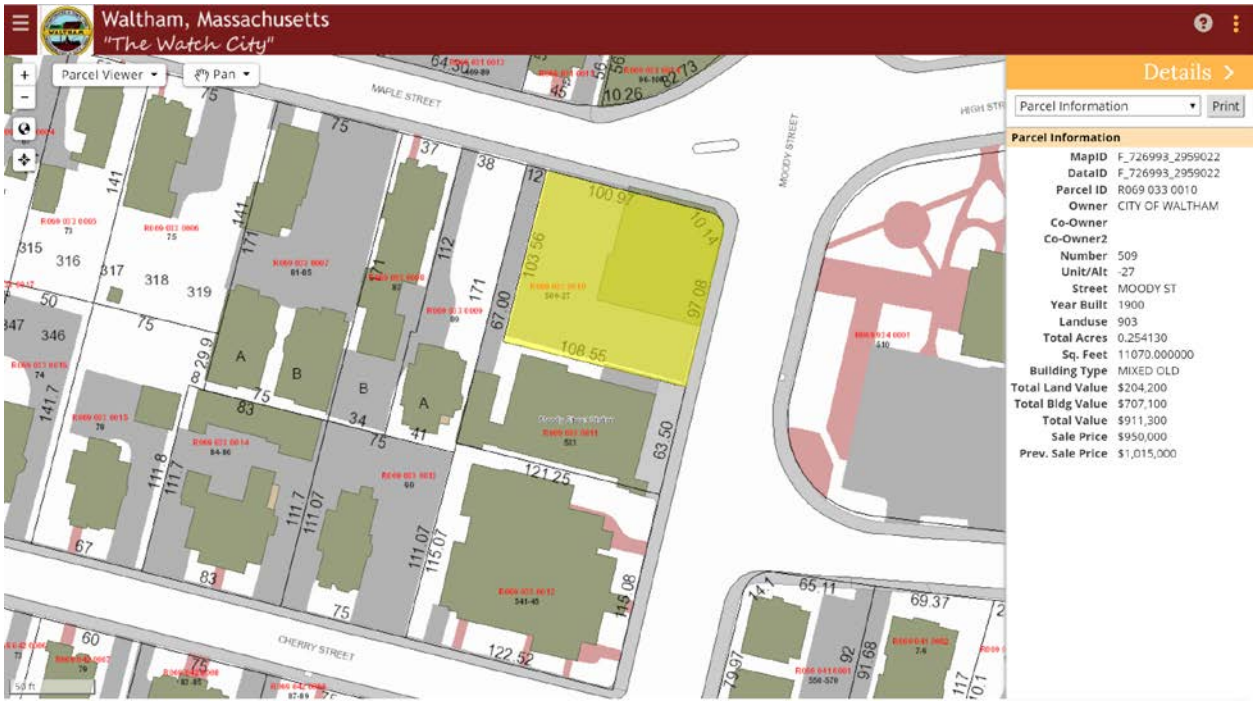
was renumbered in the 20th century, and 265 was renumbered to 515 Moody Street, as shown on the 1938 Sanborn map above. Charles Mann, a foreman at the American Waltham Watch Company, lived at 265 Moody Street, which was listed in the 1900 census as a house. Charles Mann is also found in the 1910 census at the same address. He died in 1918 after slipping and falling in his house at 265 Moody Street. So the building at 265 (515) Moody Street was a wooden structure and a residence in 1918.

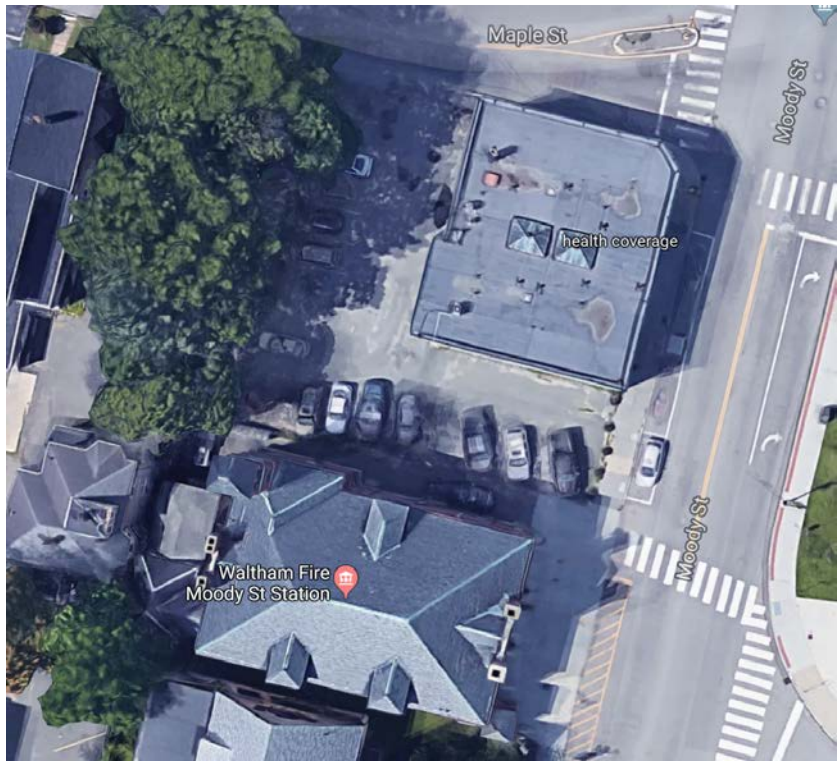
Francis Mann, the son of Charles Mann, sold the house & lot to Josephine Ristuccia et al in April 1919. The Ristuccia family owned a number of fruit stands along Moody Street, and it is unclear why they purchased the property, since they sold it six months later in November 1919 to Milton Ira Young, a Canadian immigrant from Quebec. In 1922, Milton Young was granted a building permit for a store building worth $15,000. The original Charles Mann house was probably moved to 93-95 Maple Street, and a new commercial building was built at 509-517 Moody Street. The 1938 Sanborn map shows a house with the same outline as the Mann house at 93 Maple Street. However, the address of 93-95 Maple Street disappears from Waltham annual listings in 1958. It was probably torn down to create the parking lot. So all evidence points to the Charles Mann wood residence being moved in 1922 and later demolished, and a commercial building built in 1922. The sign on the current building façade indicates "Young Building."
The 1938 Sanborn map shows a commercial building with 4 storefronts from 509 to 517 Moody Street, and separate single-story commercial buildings at 521 and 525 Moody Street. The buildings occupy all 107 feet of the frontage on Moody Street. The 1974 atlas shows one building that stretches along 107 feet of the frontage to the lot line. But the current city GIS shows no buildings where 521 and 525 had been standing. Indeed, I have parked in the lot in this space. On the 1900 map, there is a wood building on the lot, just south of the house. The 1897 Sanborn map identifies the building as a single-story, wooden market. (The 1892 Sanborn map does not show a building there). The building department records show it was subdivided into 2 stores in 1934. In 1996, Louis Kirsch was issued a permit for a building demolition for 521 and 525 Moody Street. So, although a small commercial building was built here between 1892 and 1897, the building is no longer standing.

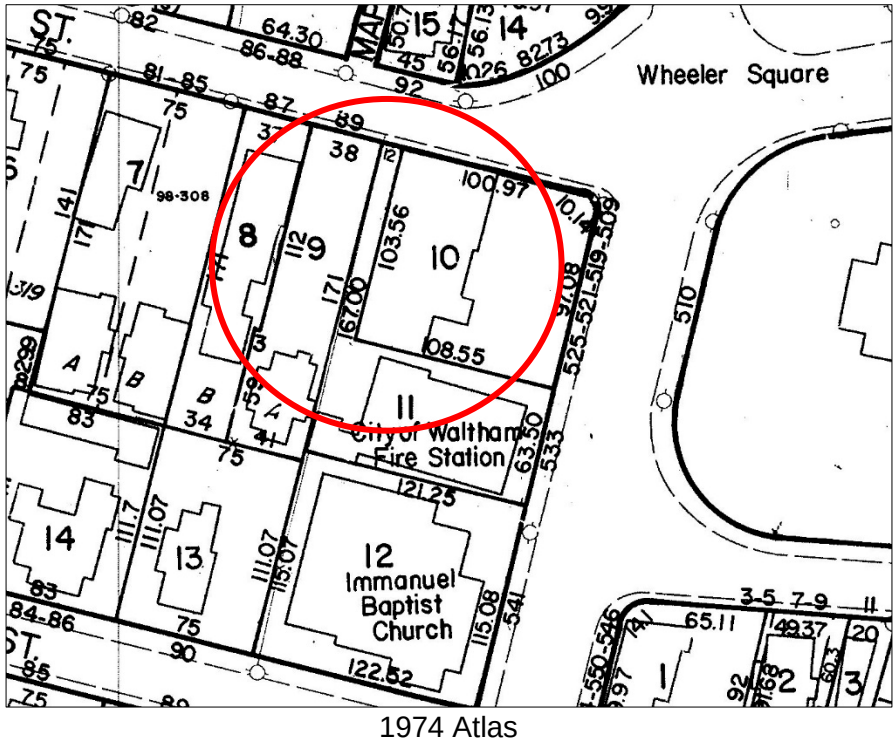
A wood, 2 ½ story residence once stood at the corner of Maple and Moody Streets, but was moved to 93-95 Maple Street on the same lot between 1918 and 1922. The building at 509-517 Moody Street was very likely built in 1922 by Milton I. Young. The original Charles Mann house, later moved to 93-95 Maple Street, was demolished in 1958. A commercial building[s] once stood at 521 and 525 Moody that was likely built between 1892 and 1897, but was demolished in 1996. No one of historical significance lived in or owned either of the buildings. So the only structure left on the lot is the Young Building at 509-517 Moody Street and this was built in 1922. A succession of small businesses occupied the 1922 building, but none of them were historically significant. Likewise, a number of different people lived over the stores, entering the premises at 97 Maple Street. None of these residents were historically significant.

IX. MAPS

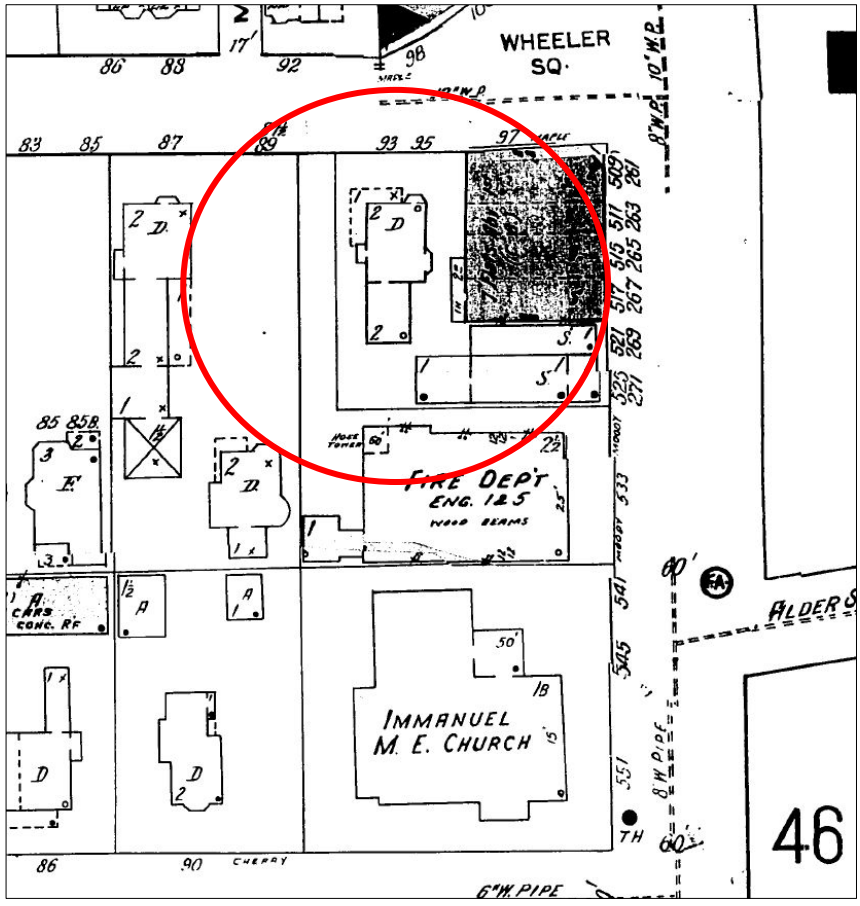
509-527 Moody Street



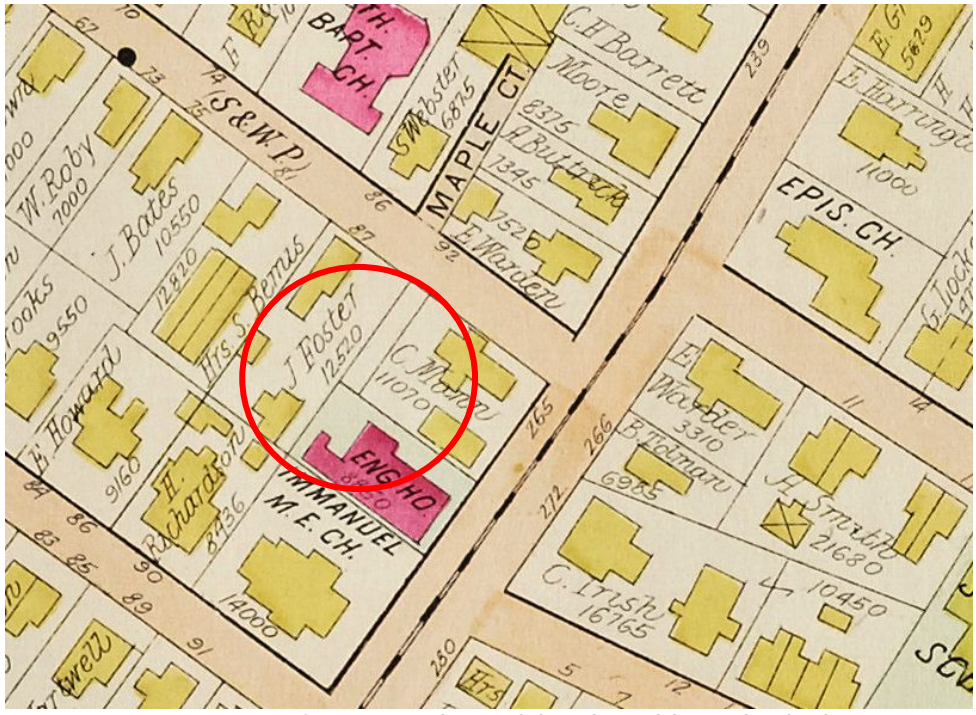

Maple St
Moody St
health coverage
Moody St
Waltham Fire
Moody St Station


Wheeler Square
City of Waltham
Fire Station
Immanuel
Baptist
Church
7
8
9
10
11
12
13
14
15
510

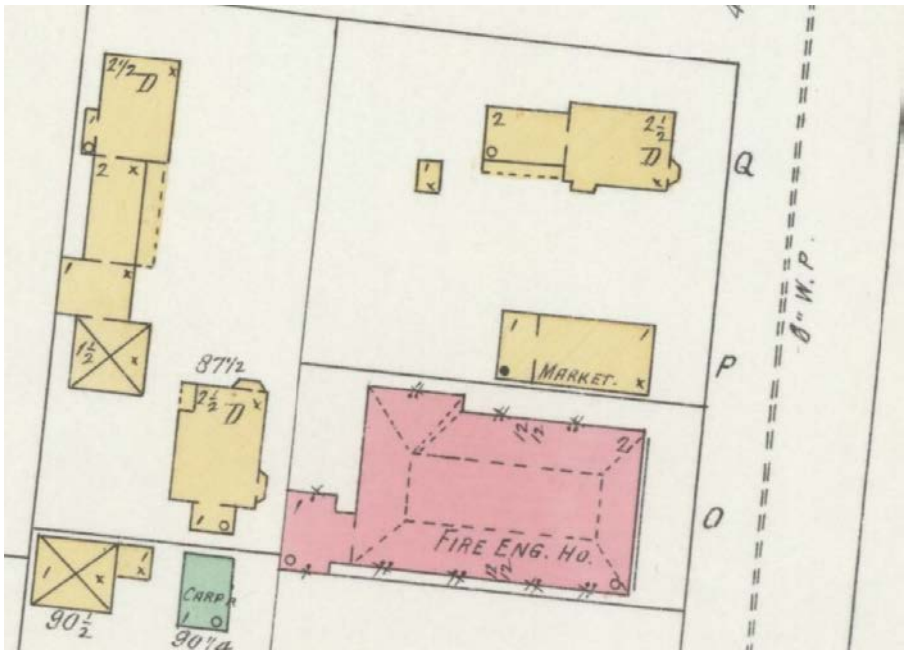
1974 Atlas



1938 Sanborn map (shows renumbering)



1900 map of 265 Moody St. (showing old numbering)



1897 Sanborn map

Technical Specifications

SECTION 011000

SUMMARY

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 00 01 through 31 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 V of the CONTRACT AND GENERAL CONDITIONS.

1.2 DEFINITIONS

A. The following terms shall be applicable to these Specifications:

1. **"City of Waltham"**: Refers to the property owner, City of Waltham, 610 Main Street, Waltham, Massachusetts 02452. Mr. Joseph Pedulla, Chief Procurement Officer. Telephone: 781-314-3000.

2. **"Contractor"**: Refers to General Contractor or Demolition Contractor who has been awarded the overall contract for performance of the Demolition work outlined by these Contract Documents.

3. **"Subcontractor"**: Refers to any contractor who is working under the direct supervision of the Contractor including but not limited to asbestos, hazardous materials, and PCB remediation workers.

B. The terms are provided to facilitate communication but do not supersede the legal definitions provided in the Contract.

1.3 REQUIREMENTS INCLUDED

A. Work under this Contract.

B. Examination of site and documents.

C. Contractor Qualifications.

D. Contract method.

E. Work sequence.

F. Supervision of Work.

G. Contractor use of premises.

H. Coordination.

I. Field engineering.

J. Reference standards.

K. Preconstruction conference.

L. Project meetings.

M. Permits, inspection, and testing required by governing authorities.

N. Cutting, coring, patching, unless otherwise indicated.

O. Debris removal.

P. Field measurements.

Q. Safety regulations.

R. OSHA safety and health course documentation.

S. Damage responsibility.

T. User Agency occupancy.

U. Asbestos and Hazardous Materials discovery.

V. Special requirements.

W. List of Drawings.

1.4 WORK UNDER THIS CONTRACT

A. In general and without limitation, the work to be done under this Contract consists of the abatement, demolition and removal of all components of the Young Building located at 509 Moody Streetl in Waltham, Massachusetts.

B. A general description of the work to be performed under this Contract shall include, but not be limited to, the following operations:

1. Apply for, pay for, and secure any and all permits required from local, state, and federal agencies, and other authorities having jurisdiction over the work. All city permitting fees are waived. The work includes PCB remediation, asbestos abatement, miscellaneous hazardous materials removal and disposal, building demolition, and selective demolition on the Site, including: submitting, revising, and re-submitting all required plans, permits, and notifications.

2. Preparation and submission of required project plans including the Contractor's PCB Remediation Work Plan, Asbestos Bulk Loading Plan(s) for MassDEP (if required), Health and Safety Plan, and project schedule. The Contractor's PCB Remediation Work Plan shall be finalized, including the City of Waltham and the Designer's comments, within two weeks of receiving Notice To Proceed. A draft PCB remediation Work Plan shall be submitted with the Contractor's bid for City of Waltham and the Designer's review.

3. Mobilization to the Site of all equipment, materials, labor, and required vehicles.

4. Provide a drawing for the installation of a truck wash station at each of the Site buildings.

5. Verification of existing conditions including but not limited to access constraints, availability of utilities for temporary connections, site constraints, review of existing documentation, etc.

6. Erect all staging, scaffolding, planking, etc. to access asbestos-containing materials, PCB-containing materials, and other hazardous materials for removal. Staging and scaffolding installation shall require a design stamped by a professional engineer registered in the Commonwealth of Massachusetts and shall be reviewed by the Designer.

7. Provide an electrical subcontractor to ensure lock-out tag-out procedures are observed and to connect electrical equipment required for designated material removal to the on-site electricity. The Contractor shall provide temporary power from existing electrical panels and transformers for all of its operations including tools, equipment, temporary lighting, smoke/heat detectors, fire protection, safety equipment, etc. Provide generator power, as necessary, for the portions of or for the entire duration of the project.

8. Removal, management, transportation and off-site disposal of all interior and exterior PCB-containing caulk between masonry, concrete, window surrounds, doors, metal frames, metal flashing, piping, throughout the building. Removal, management, transportation and off-site disposal of all exterior PCB-containing caulk between masonry, concrete, window surrounds, and window frames on the exterior of the building. Removal of all interior and exterior windows, frames, doors, and from the CERC building. These materials and the substrate to which they are adhered shall be considered as PCB Bulk Product Waste and managed in accordance with 40 CFR 761. All exterior brick masonry shall be removed and disposed as PCB bulk product waste. Door caulk is also an asbestos-containing material that must be removed using manual labor prior to demolition of the brick façade.

9. Removal, management, transportation, and off-site disposal as PCB Bulk Product Waste of all interior and exterior building materials in contact with PCB-Bulk Product Waste caulking, including but not limited to, window and door frames, louvers, metal studs/framing, wood/plywood, support frames, steel columns and beams, wiring, filler material, conduit, structural steel, foam backer rod, rubber gasketing/backer rods, metal channel with fiberglass insulation, fasteners, ties, rebar, plaster, lathe, plaster framework, piping, ductwork, insulation, fireproofing, concrete, CMU, concrete, and brick. No metal decontamination will be allowed under this contract.

10. Transportation and lawful off-site recycling and/or disposal of concrete and masonry that contains PCB concentrations of less than one milligram per kilogram.
11. Transportation and lawful disposal of concrete and masonry (including CMU) that contains PCB concentrations greater than fifty milligrams per kilogram. This material will be considered PCB Bulk Product Waste and managed in accordance with 40 CFR 761. Prior to removal, CMU and brick materials classified as PCB Bulk Product Waste shall be fully and completely marked with a bright marking paint. Metal ties and rebar within the PCB Bulk Product Waste removal zone shall also be marked with a bright-colored paint and disposed by the Contractor as PCB Bulk Product Waste.
12. Prior to removal, concrete materials classified as PCB Bulk Product Waste, as well as, metal ties and rebar, shall be marked with a bright marking paint.
13. Removal of PCB impacted concrete columns, floor and ceiling slab sections, and spandrel beams associated with the Building that are in contact with PCB-containing caulk and disposal as PCB Bulk Product Waste under the performance-based disposal provisions of 40 CFR 761. Prior to removal, concrete materials classified as PCB Bulk Product Waste, as well as, metal ties and rebar, shall be marked with a bright marking paint.
14. Removal, handling, transportation, and lawful disposal of all disposable personnel protection equipment and incidental materials.
15. Provide the City of Waltham and the Designer with required waste disposal documentation. Payment will be made only upon receipt of documentation from the disposal facility.
16. Removal of all interior and exterior asbestos-containing materials (ACMs), asbestos-contaminated materials, hazardous materials, containerized wastes, and proper packaging and off-site disposal.
17. Asbestos-containing debris is present throughout the Building. All non-porous (metal) items stored within the building must be thoroughly decontaminated and disposed off site. Porous items, such as furniture, wood, cardboard, paper products, etc. must be packaged and disposed as ACWM.
18. Contractor is responsible for conducting a thorough walkthrough of the building to identify locations on the interior and exterior of the building where caulk is present or formerly present.
19. Complete removal and disposal of the building structures, foundations, footings, as outlined in these Specifications.
20. Excavation, site clearing, and site work as outlined in these Specifications.
21. Demobilization of all equipment and materials from the Site.

C. The Scope of Work, without limiting the generality thereof, includes all personnel, labor, materials, equipment, and services required to perform the work described fully in the Specifications.

D. The Massachusetts Standard Labor Wage rates, as outlined in the exhibits, will be used in the construction of this project. The Prevailing Wages Schedule can be found at www.city.waltham.ma.us/bids

1.5 SPECIAL CONDITIONS

A. It should be understood by the Contractor that the site needs to be accessible during the project duration and the Contractor must be sensitive to the fact that the City of Waltham personnel will be accessing the roadways and other buildings throughout the Site. Any road closures or construction activity that requires police detail shall be the responsibility of the Contractor.

B. Power as currently available at the Site will be made available to the Contractor for use on the Project. The Contractor is responsible to follow all applicable standards and codes and for performing lock-out, tag-out activities as required to perform the work safely (e.g. providing temporary lighting). The Contractor is responsible for supplying generator power, as required to complete the project.

C. Domestic water is not available within the buildings. There are fire hydrants located sporadically near the site that may be used during the Project. The Contractor shall coordinate with the City of Waltham Fire Department to obtain access to hydrants. The Contractor shall obtain flow meters and backflow preventers from the City and shall be responsible for all costs associated with obtaining and installing the meters and preventers. The Contractor will be responsible for all costs associated with the water supply. The Contractor shall provide water trucks to supplement water available via fire hydrants if necessary.

D. The buildings have passenger elevators. None of the elevators are available for use. The elevators must remain out of service, with the fuses removed and main line disconnects maintained in the off position.

1.6 EXAMINATION OF SITE AND DOCUMENTS

A. A pre-bid conference will be held at the job site on the date and at the time indicated in the Invitation to Bid. This is the only opportunity for site inspection. An additional inspection time may be set up by the City.

B. The bidders are expected to examine and to be thoroughly familiar with all contract documents and with the conditions under which the work is to be carried out. The City of Waltham will not be responsible for errors, omissions, and/or charges for extra work arising from the Contractor's, Demolition Contractor's, or Subcontractors failure to familiarize themselves with the contract documents, that he is familiar with the conditions and requirements of both where they require, in any part of the work a given result to be produced, that the contract documents are adequate and he will produce the required results.

1.7 CONTRACT METHOD

A. Work under this contract shall be lump sum price, for the scopes of work as described in these specifications. Each building shall be priced singularly; however, the award shall be based on the total project price.

B. The Contractor with the approval of the City may modify the sequence of these activities. The Work will be conducted in the following project sequence and as described in Section 1.4; some overlap of activities may occur, subject to the requirements in these specifications:

1. Mobilization;

2. Removal and demolition of un-regulated materials;

3. Asbestos and hazardous materials removal;

4. PCB remediation;

5. Building Demolition;

6. Site work;

7. Demobilization.

C. The Contractor shall submit a construction schedule to the Designer for approval no later than ten (10) business days after issuance of Notice to Proceed.

D. The City of Waltham reserves the right to request changes to the proposed sequence of work after review of the schedule and Work Plan.

1.8 SUPERVISION OF WORK

A. The Contractor shall be held directly responsible for the correct installation of all work performed under this Contract. The Contractor must make good repair, without expense to the City of Waltham, of any part of the new work, or existing work to remain, which may become inoperative on account of leaving the work unprotected or unsupervised during construction of the system or which may break or give out in any manner by reason of poor workmanship, defective materials or any lack of space to allow for expansion and contraction of the work during the Contractor's warranty period, from the date of final acceptance of the work by the City of Waltham.

B. The Contractor shall furnish a competent Massachusetts licensed superintendent satisfactory to the City of Waltham and to the Designer. The licensed superintendent shall supervise all work under this contract and who shall remain on duty at the site throughout the Contract period while work is in progress.

1. Submit the name and resume of the superintendent for approval to the City of Waltham. Include experience with projects of equal size and complexity.

1.10 CONTRACTOR USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated within the construction fence to be erected around the Site buildings by the Contractor. Coordinate work of all trades required within the construction fence boundary. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Allow for City of Waltham occupancy and use by the public (if applicable).

2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and

available to the City of Waltham, their employees, and emergency vehicles at all times.

B. Schedule and perform work to afford minimum of interruption to normal and continuous operation of utility systems. The Contractor shall submit to the City of Waltham and the Designer for approval, proposed schedule for performing work; including construction of new utilities, re-routing of existing utilities and final connection of new work to existing work. Schedule shall indicate shutdown time required for each operation.

C. The Contractor shall notify the City of Waltham in writing, 72 hours in advance of the proposed time for shutting down or interrupting any utilities, services or facilities which may affect the operation of other buildings, services or facilities at the Site.

D. Coordinate with City of Waltham and the Designer, work in connection with adjacent driveways, walks, or other facilities which would prevent access thereto or interrupt, restrict, or otherwise infringe upon the City of Waltham's use thereof.

E. The Contractor shall be aware of the sensitivity of the neighborhood organizations to noise, dust, debris and site maintenance and take appropriate precautions to avoid conflict.

F. Damage to existing work, if caused by the Contractor's operations under this Contract, shall be repaired at the Contractor's expense.

1. An existing conditions survey shall be conducted, with the Designer, the City of Waltham representatives, at which existing conditions will be videotaped by the Contractor. A copy of the videotape will be provided to the City of Waltham.

G. Trenching and other work outside construction limits shall be expedited to fullest extent and carried out with minimum of inconvenience to normal operation of traffic. Walks, paved or landscaped areas over which temporary driveways cross, shall upon completion of the work, be restored to their original condition. Temporary roadways shall be bridged over trenched areas.

H. The Contractor can gain access to the premises during the hours specified below. In addition the Contractor and his personnel will limit themselves only within the working premises during working hours. If work needs to be scheduled during times other than those listed below, Contractor shall inform the City of Waltham one week prior to work.

1. Deliveries: 7:00 am to 5:00 pm.

2. General Access: 7:00 am to 5:00 pm.

I. Confine operations at the site to areas permitted by:

1. Laws

2. Ordinances

3. Permits

4. Contract Documents

J. Contractor shall supervise the use of the site related to construction and be responsible for

correcting any damage identified by the City of Waltham to their satisfaction.

1. An existing conditions survey shall be conducted, with the Designer and City of Waltham representatives, at which existing conditions will be videotaped by the Contractor. A copy of the videotape will be provided to the City of Waltham.

K. All available existing utilities adjacent to the construction site will be available as described herein. Temporary connections to these utilities, all metering, transformers, removal, usage, and their associated costs will be the responsibility of the Contractor.

1.11 COORDINATION

A. The Contractor shall be responsible for the proper fitting of all the work and for the coordination of the operations of all trades, Subcontractors or material and men engaged upon the work. The Contractor shall do, or cause his agents to do, all cutting, fitting, adjusting, and repair necessary in order to make the several parts of the work come together properly.

1. Examine Contract Documents in advance of start of construction and identify in writing questions, irregularities or interference to the City of Waltham in writing. Failure to identify and address such issues in advance becomes the sole responsibility of the Contractor. A conflict that would cause the reduction of the normal ceiling height of any occupied space is considered to be an interference.

B. The work sequence shall follow planning and schedule established by the Contractor as approved by the Designer and the City of Waltham. The work upon the site of the project shall commence promptly and be executed with full simultaneous progress. Work operations which require the interruption of utilities, service, and access shall be scheduled so as to involve minimum disruption and inconvenience, and to be expedited so as to insure minimum duration of any periods of disruption or inconvenience.

C. The Contractor shall review the tolerances established in the specifications for each type of work and as established by trade organizations. The Contractor shall coordinate the various trades and resolve any conflicts that may exist between trade tolerances without additional cost to the City of Waltham. The Contractor shall provide any chipping, leveling, shoring or surveys to ensure that the various materials align as detailed by the Designer and as necessary for smooth transitions not noticeable in the finished work.

1.12 FIELD ENGINEERING

A. Provide field engineering services; establish grades, lines and levels, by use of recognized engineering survey practices. All field engineering surveying shall be performed by a licensed Land Surveyor registered in the Commonwealth of Massachusetts.

B. The Contractor shall survey and submit exact dimensional layouts as required. Engage and pay for the services of a Massachusetts Registered Surveyor acceptable to the City of Waltham to locate and protect control and reference points.

1.13 REFERENCE STANDARDS

A. For products specified by association or trade standards, comply with requirements for the standard, except where more rigid requirements are specified or are required by codes. Refer to Section 014200 - REFERENCES.

B. Where reference is made in the Contractual Documents to Publications and Standards issued by Associations or Societies, the intent shall be understood to specify the current edition of such Publications or Standards (including tentative revision) in effect on the date of the contract advertisement notwithstanding any reference to a particular date.

1.14 PRE-CONSTRUCTION CONFERENCE

A. In accordance with Article V of the CONTRACT AND GENERAL CONDITIONS, a pre-construction conference to review the work will be conducted by the City of Waltham.

B. Representatives of the following shall be required to attend this conference:

1. Designer

2. Contractor

3. All Subcontractors

4. Applicable Municipal Agencies

C. The Contractor shall have a responsible representative at the pre-construction conference to be called by the City of Waltham following the award of the contract, as well as representatives of field or office forces and major Trade contractors. All such representatives shall have authority to act for their respective firms. The pre-construction conference is to be held within five days of Notice to Proceed, or as otherwise determined by the City of Waltham.

1.15 PROJECT MEETINGS

A. Project meetings shall be held on a weekly basis and as required subject to the discretion of the City of Waltham.

B. As a prerequisite for monthly payments, ordering schedules, shop drawing submitted schedules, and coordination meeting schedules shall be prepared and maintained by the Contractor and shall be revised and updated on a monthly basis, and a copy shall be submitted to the City of Waltham and Designer.

C. In order to expedite construction progress on this project, the Contractor shall order all materials immediately after the approval of shop drawings and shall obtain a fixed date of delivery to the project site for all materials ordered which shall not impede or otherwise interfere with construction progress. The Contractor shall present a list and written proof of all materials and equipment ordered (through purchase orders). Such list shall be presented at the

meetings and shall be continuously updated.

D. Scheduling shall be discussed with all concerned parties, and methods shall be presented by the Contractor, which shall reflect construction completion not being deferred or foreshortened. Identify critical long-lead items and other special scheduling requirements. The project schedule is to include time for submission of shop drawing submittals, time for review, and allowance for resubmittal and review.

E. Project meetings shall be chaired by the Designer.

F. Minutes of the project meetings shall be prepared by the Designer and shall be distributed to all present. The Designer's meeting minutes shall be the only official meeting record.

1.16 PERMITS, INSPECTION, AND TESTING REQUIRED BY GOVERNING AUTHORITIES

A. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having any jurisdiction require any portion of the Work to be inspected, tested, or approved, the Contractor shall give the Designer, the City of Waltham or his/her designated representative, and such Authority timely notice (5 business days minimum) of its readiness so the Designer may observe such inspecting, testing, or approval.

B. Prior to the start of construction, the Contractor shall complete application to the applicable Building Code enforcement authority for a Building Permit. Such Permit shall be displayed in a conspicuous location at the project site.

C. Unless otherwise specified under the Sections of the Specifications, the Contractor shall pay such proper and legal fees to public officers and others as may be necessary for the due and faithful performance of the work and which may arise incidental to the fulfilling of this Contract. As such, all fees, charges, and assessments in connection with the above shall be paid by the Contractor.

D. The Contractor shall maintain at the site, for the duration of construction operations, at least one (1) up-to-date copy of all relevant codes and standards listed in the Contract Documents or determined to be applicable to the work. One (1) copy of such codes shall be for the exclusive use of the City of Waltham and the Designer and its Consultants, and shall be kept in the Contractor's site office.

E. The Contractor shall furnish and install all information required by the building official and shall secure the general building permit for the work promptly on award of the Contract. The Contractor shall conform to all conditions and requirements of the permit and code enforcement authority. The Contractor shall provide names and license numbers of its responsible representatives to complete the application for permit, and shall receive the permit and promptly distribute copies to the City of Waltham and the Designer.

F. Contractor and specialized Subcontractors as applicable shall identify all permits (other than general building permit) required from Authorities having jurisdiction over the Project for the construction and occupancy of the work. The Contractor shall prepare the necessary applications and submit required plans and documents to obtain such permits in a timely manner, and shall furnish the required information to the Building Official and obtain the required permits as early as practicable after award of the Contract.

1. The Contractor shall display all permit cards as required by the Authorities, and shall deliver legible photocopies of all permits to the City of Waltham and the Designer promptly upon their receipt.

2. The Contractor shall arrange for all inspections, testing and approvals required for all permits, and shall notify the Designer and the City of Waltham of such inspections at least three (3) business days in advance (longer if so required in the various Sections of the Specifications), so they may arrange to observe.

3. The Contractor shall comply with all conditions and provide all notices required by all permits.

4. The Contractor shall perform and/or arrange for and pay all testing and inspections required by the Governing Codes and Authorities, other than those provided by the City of Waltham, and shall notify the Designer and City of Waltham of such inspections at least three (3) business days in advance of all such testing or inspection, so they may arrange to observe. Fees are waived for all City required permits.

5. Where Inspecting Authorities require corrective work for conformance with applicable Codes and Authorities, the Contractor shall promptly comply with such requirements, except in cases where such requirements clearly exceed the requirements of the Contract Documents, in which case the Contractor shall proceed in accordance with the procedures for modifications or changes in the work established in the Contract Documents, as amended.

1.17 CUTTING, CORING, AND PATCHING, UNLESS OTHERWISE INDICATED

A. The **Contractor shall coordinate all cutting, coring, fitting and patching of the work** that may be required to make its several parts come together properly and fit it to receive or be received by work of the Subcontractors shown on the Drawings and Specifications. **The Subcontractor shall perform all cutting, coring or patching.**

B. The Contractor shall coordinate that the work of the subcontractor is not endangered by any cutting, coring, excavating, or otherwise altering of the work and shall not allow the cutting or altering the work of any Subcontractor except with the written consent of the Designer.

C. Submit a written request to Designer well in advance of executing any cutting or alteration which affects:

1. Work of City of Waltham or a separate Contractor.

2. Structural value or integrity of any element of the Project.

3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance, or safety of operational elements.

5. Visual qualities of sight-exposed elements.

6. Request shall include:
   a. Identification of the Project.
   b. Description of affected work.
   c. The necessity for cutting, alteration, or excavation.
   d. Effect on work of the City of Waltham or any separate Contractor, or on structural or weatherproof integrity of Project.
   e. Description of proposed work:
   f. Alternatives to cutting and patching.
   g. Cost proposal, when applicable.
   h. Written permission of any separate Contractor whose work will be affected.

7. Should conditions of Work or the schedule indicate a change of products from original installation, Contractor shall submit request for substitution.

8. Submit written notice to Designer designating date and time the work will be uncovered a minimum of three business days in advance.

D. Performance:

1. Execute cutting and patching by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
   a. In general, where mechanical cutting is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.
   b. Comply with the requirements of Section 310000 - SITEWORK where cutting-and-patching requires excavating and backfilling.
   c. Prior to cutting and structural steel or concrete work, contact Designer and Project Structural Engineer in writing. Do not cut any structural steel and concrete work until approval has been granted by the Designer and the City of Waltham.

2. Employ original installer or fabricator to perform cutting and patching for:
   a. Weather-exposed or moisture-resistant elements.
   b. Sight-exposed finished surfaces.

3. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

4. Restore work which has been cut or removed; install new products matching existing to provide completed Work in accordance with requirements of Contract Documents.

5. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

6. Patch with seams which are durable and as invisible as possible. Flash and seal all penetration of exterior work. Comply with specified tolerances for the work.

7. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.
   a. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch.

8. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

a. For continuous surfaces, refinish to nearest intersection.
b. For an assembly, refinish entire unit.

1.18 UTILITIES

A. Existing Utilities Services:

1. Interruptions to critical existing utility services will not be allowed.
   a. All relocation of existing electrical, telephone, and gas services that are utility company owned shall be performed by the respective utility company, and the cost of any charges for such work shall be paid by the Contractor. All utility installations and relocation shall be the responsibility of the Contractor. Coordination of all of the aforesaid work is the responsibility of the Contractor in cooperation with the Contractor.

2. The Contractor, in cooperation with the City of Waltham shall locate and record on Drawings all existing utilities along the course of the work by such means as the Designer and the City of Waltham may approve, and shall preserve such marked locations until the work has progressed to the point where the encountered utility is fully exposed and protected as required. It shall be the Contractor's responsibility, to notify the proper authorities and/or utility company before interfering therewith.

3. Existing utilities that are indicated on available review drawings or whose locations are made known to the Contractor and Contractor prior to excavations, though accuracy and information as to grades and elevations may be lacking, shall be protected from damage during the excavation and backfilling operations and, if damaged by the Contractor, it shall be repaired by the Contractor at his/her own expense.

4. All exposed conduits, wires, and/or cables shall be provided with sufficient protection and support to prevent failure, fraying, or damage due to backfilling or other construction operations.

5. The Contractor shall not obstruct access to existing active utility system manholes and catch basins which continue to serve facilities other than the project construction site. The Contractor shall exercise measures as necessary to prevent the placement of impediments that limit continuous access by authorized utility company or City of Waltham maintenance personnel and shall be required to reimburse the utility company or City of Waltham for any expense incurred as a result of need to remove any such impediments to access.

B. Dig-Safe:

1. Within the Commonwealth, "Dig-Safe" (Dig Safe Systems, Inc.) is the name of the Utility Underground Plant Damage Prevention Authority. They are located at 331 Montvale Avenue; Woburn, MA 01801. The telephone number is 1-888-DIGSAFE (344-7233). Contractors must notify "Dig-Safe" of contemplated excavation, demolition, or explosive work in public or private ways, and any utility company right-of-way easement. Notification must be made at least seventy-two (72) hours prior to the work, but not more than sixty (60) days before the contemplated work.

2. "Dig-Safe" is required to respond to the notice within seventy-two (72) hours from the

time said notice is received by designating at the locus the location of pipes, mains, wires, or conduits.

3. Contractors shall not commence with work until “Dig-Safe” has responded as noted above.

4. Prior to the “Dig-Safe” notification, the City of Waltham requires Contractors to provide their Superintendent with current “Dig-Safe” regulations, and a copy of Massachusetts General Laws, Chapter 82, Section 40.

1.19 DEBRIS REMOVAL

A. **The Contractor shall coordinate the removal of all demolition and construction waste** from the job site on a daily basis. Waste shall be segregated for recycling. Comply with requirements of Section 017418 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

B. Debris shall be legally disposed of in a D.E.P. approved disposal site. The site to be used shall be submitted to and approved by the City of Waltham and the Designer prior to the start of construction. All required dumping permits shall be obtained prior to start of construction. Contractor shall submit receipts from the disposal site(s) as evidence of legal disposal. The Contractor shall pay the cost of any charges for debris removal.

B. The Contractor shall bear responsibility for maintaining the building and site clean and free of debris, leaving all work in clean and proper condition satisfactory to the City of Waltham and the Designer. The Contractor shall ensure that each of the Subcontractors clean up during and immediately upon completion of their work. Clean up includes the following tasks:

1. Remove all rubbish, waste, tools, equipment, appurtenances caused by and used in the execution of work.

C. Prevent the accumulation of debris at the construction site, storage areas, parking areas, and along access roads and haul routes.

D. Provide containers for deposit of debris and schedule periodic collection and disposal of debris.

E. Prohibit overloading of trucks to prevent spillage on access and haul routes.

F. The Contractor shall be responsible for proper disposal of all construction debris leaving the site.

1.20 FIELD MEASUREMENTS

A. Although care has been taken to ensure their accuracy, the dimensions shown for existing items and structures are not guaranteed. It is the responsibility of the Contractor to verify these dimensions in the field before fabricating any construction component. No claims for extra payment due to incorrect dimensions will be considered by the Commonwealth.

1.21 SAFETY REGULATIONS

A. This project is subject to compliance with Public Law 91-596 "Occupational Safety and Health Act" - latest edition (OSHA 29 CFR 1926), with respect to all rules and regulations pertaining to construction, including Volume 36, numbers 75 and 105, of the Federal Register, as amended, and as published by the U.S. Department of Labor.

B. Submit the name of the Contractor's safety officer to the City of Waltham. Submit copies of safety reports to the City of Waltham monthly.

C. All accident reports are to be transmitted to the City of Waltham within 24 hours of occurrence.

1.22 OSHA SAFETY AND HEALTH COURSE DOCUMENTATION

A. OSHA Safety and Health Course Documentation Records: Chapter 306 of the Massachusetts Acts of 2004 requires that everyone employed at the jobsite must complete a minimum 10-hour long course in construction safety and health approved by the U.S. Occupational Safety and Health Administration (OSHA) prior to working at the jobsite. Compliance is required of Contractors' and Subcontractors' on-site employees at all levels whether stationed in the trailer or working in the field. Unless the Massachusetts Attorney General's office indicates otherwise, this requirement does not apply to home-office employees visiting the site or to suppliers' employees who are making deliveries.

B. Documentation records shall be initially compiled by the Contractor and Subcontractors as part of their certified payrolls, and the Contractor shall create and maintain a copy of the documentation on site at all times. On-site documentation shall be filed in alphabetical order and immediately available to the City of Waltham and OSHA inspectors. Fines imposed for non-compliance shall be promptly paid by the Contractor at no additional expense to the City of Waltham. Delays in the progress of the Work caused by such non-compliance will not be acceptable as the basis for an extension of contract time or change order request.

1.23 DAMAGE RESPONSIBILITY

A. The Contractor shall repair, at no cost to the City of Waltham, any damage to building elements, site appurtenances, landscaping, utilities, etc. caused during demolition operation and work of this Contract.

1.24 ASBESTOS AND HAZARDOUS MATERIALS DISCOVERY

A. If unanticipated asbestos-containing materials or other Hazardous Materials not included in Contract are discovered at any time during the course of work, the Contractor shall cease work in the affected areas only and continue work in other areas, at the same time notify the City of Waltham and the Designer of such discovery. Do not proceed with work in such affected areas until written instructions are received. If removal is required, payment will be made in accordance with the contract unit prices bid for each respective material. In the absence of unit prices, costs shall be negotiated or otherwise established prior to commencement of removal, in

accordance with provisions of the Contract.

1.25 SPECIAL REQUIREMENTS

A. The Contractor shall prepare a Health and Safety Plan that addresses protection of employee and public health and safety. The minimum contents of the Plan are specified in Section 028100 – MANAGEMENT AND DISPOSAL OF WASTE STREAMS.

B. The Contractor shall be solely responsible for implementing the procedures specified in the Plan.

C. The Contractor shall make available complete sets of personal protective equipment and clothing to the City of Waltham for use during site observations/inspections by the City of Waltham and the Designer. These shall be supplied and maintained at no cost to the City of Waltham and the Designer, and shall be returned to the Contractor upon the completion of work, except for disposable protective clothing.

1. The Contractor shall provide a repository for collection and disposal of health and safety materials. Collection and disposal of contaminated disposable supplies shall be at no additional cost.

PART 2 – PRODUCTS
Not Used

PART 3 – EXECUTION
Not Used

END OF SECTION

SECTION 023000

SUMMARY OF EXISTING CONDITIONS

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.

1.2 SECTION INCLUDES

A. Summary of Existing Conditions.

1.3 SUMMARY

A. Each Bidder should visit the site of the proposed Work to fully acquaint him/herself with the existing conditions of the work to be performed and shall inform him/herself as to the facilities involved, the difficulties, and the restrictions attending the performance of the Contract. The Bidder shall thoroughly familiarize him/herself with the Contract including all Attachments attached to these Specifications. Bidders should visit the site and inspect the buildings and building construction materials. Bidders shall be thoroughly familiar with all existing buildings and site conditions under which work will be executed. Neither the City of Waltham nor the Designer shall be responsible for errors, omissions, and/or changes for extra work arising from the Contractor's failure to familiarize themselves with Contract documents and existing conditions.

B. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling, and storage of materials, availability of labor, water, electric power, roads, and uncertainties of weather, or similar physical conditions at the Site, the character of equipment and facilities needed prior to and during the prosecution of the work, and all other matters which can in any way affect the work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with all available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

C. There are no as-built building and site drawings available for review as part of the bid process. Asbestos and hazardous materials survey reports are available for review at Waltham City Hall. The bidder shall make arrangements directly with the City of Waltham to view these documents.

D. Interior and exterior investigations of the building component composition have been performed including identifying and inventorying asbestos-containing material, mercury containing materials, petroleum products, containerized wastes, and refrigerants. The Contractor is responsible for identification and removal of all regulated materials and wastes. All containerized wastes and building systems fluids may not be broken out in the inventory. Field verification is required for all containerized wastes and building systems fluids. The Contractor is responsible for removal and proper disposal of all containerized wastes, building systems fluids present within the buildings.

A. The Contractor and all Subcontractors shall be advised that testing has been conducted of representative painted/coated materials existing at the Site and these materials may contain low concentrations lead. Paints/coatings containing lead concentrations of greater than 0.5 percent by weight or 1.0 mg/cm^2, are considered "lead based paints by US EPA. 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. Removal of lead paint may be required prior to cutting of PCB impacted portions of steel beams and structural members.

B. Interior and exterior investigations of building component composition have been performed for polychlorinated biphenyl (PCBs). Copies of reports and certified analytical data sheets will be made available for review by Bidders upon request. The quantities listed herein represent estimates only and are not guaranteed. It is the responsibility of the Bidders to review and confirm all field conditions, including: locations, substrate materials and conditions. Neither the City of Waltham nor the Designer will be responsible for errors or omissions and/or charges for extra work arising from any bidder's failure to become familiar with the existing conditions of the Site. No claims for extra payment due to incorrect quantities will be considered. By submitting a bid, a Bidder agrees and warrants that he is familiar with the existing site conditions, requirements of the work and the results to be produced. By submitting a bid, the bidder further agrees that the descriptions contained herein (i.e., quantities, descriptions, locations, areas, thicknesses, etc.) are adequate and that the Bidder will produce the required results.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 024000

BUILDING AND ANCILLARY STRUCTURES DEMOLITION

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 WORK

A. The CONTRACTOR shall provide labor, materials and equipment to complete the work of this Section and as shown on the Drawings. Generally, the demolition work shall include, but not be limited to:

1. 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.

2. The Contractor shall retain a Professional Engineer, registered in Massachusetts, to analyze the existing structures and determine:

    a. The capacities of existing floors if the Contractor is going to operate equipment or store debris on these areas.
    b. What equipment can be safely driven or placed on existing structures considering what is around the equipment when it is lifting its load.
    c. Where equipment can be safely driven or placed on existing structures.
    d. The limits for stockpiling of debris on existing structures.
    e. Whether the structures have adequate strength to support demolition activities.

3. The Contractor shall control access to areas that do not have the strength to support construction activities or where the strength has not been determined or verified by the Designer or by the Contractor’s structural engineer.

4. Demolition and removal of all designated buildings and structures including all contents, equipment, and systems within the buildings unless otherwise noted.

5. Demolition and removal of all foundation walls, floor slabs, beams, girders, spandrels, columns, structural walls, partition walls, and footings.

6. Installation of temporary shoring and lateral bracing (if necessary) for stability during demolition and its removal once it is no longer necessary.

7. Removal of all under-slab utilities.

8. Cutting capping steam lines, wet-wrapping exposed ends of asbestos-containing piping, and sealing steam tunnels for abatement by others at a later date.

9. Segregating uncoated asphalt, brick and concrete (ABC) from other debris that is designated as PCB Bulk Product Waste and other waste streams.

10. Removal and legal disposal of demolished materials off site at the Contractor's expense. All existing removed materials, items, trash, and debris shall become the property of the Contractor and shall be completely removed from the site and legally disposed, recycled, or salvaged at his/her expense. On-site sale of material is not permitted.

11. If work is performed in winter months, the CONTRACTOR shall be responsible for snow removal to access the Site and perform all work described herein.

12. Protection of asphalt paving surrounding the buildings that are designated to remain.

13. Scheduling and sequencing operations without interrupting utilities serving occupied areas in other buildings. If interruption is required, obtain written permission from the utility company and the City of Waltham. Provide temporary services as necessary to serve occupied and usable facilities when permanent utilities must be interrupted, or schedule interruption when the least amount of inconvenience will result.

B. Related work: The following items are closely related to the demolition work but not included in this Section and will be performed under the designated Sections.

1. Section 015000 – TEMPORARY FACILITIES AND CONTROLS

2. Section 017700 - CONTRACT CLOSEOUT

3. Section 025000 - ASBESTOS REMOVAL AND RELATED WORK

4. Section 025110 - CONCRETE AND MASONRY DEMOLITION

5. Section 028100 MANAGEMENT AND DISPOSAL OF WASTE STREAMS

6. Section 028433 –PCB CAULK REMOVAL

7. Section 310000 – EARTHWORK

8. Section 311000 – SITE CLEARING

1.3 SCHEDULE

A. The Contractor shall perform work in accordance with the schedule prepared by the City of Waltham.

1.4 REFERENCES

A. 310 CMR 19.060 (Solid Waste Regulations – Beneficial Use Determination)

B. 40 CFR 761 (POLYCHLORINATED BIPHENYLS (PCBs) MANUFACTURING, PROCESSING, DISTRIBUTION IN COMMERCE, AND USE PROHIBITIONS**)**

1.5 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the City of Waltham's property.

B. Dismantle: Controlled demolition procedure where segments of structure are temporarily shored, sawcut, and removed using a crane.

1.6 MATERIALS OWNERSHIP

A. Demolished materials shall become the Contractor's property and shall be removed from the site and all recyclable demolition material shall be recycled and non-recyclable material shall be disposed at approved legal landfills.

1.7 SUBMITTALS

A. The Contractor shall submit each item in this Article according to the Conditions of the Contract and Section 013300 - SUBMITTAL REQUIREMENTS.

B. Quality Control Submittals (prior to commencement of on-site demolition):

1. Project Scheduling requirements in accordance with Section 013200.

2. Demolition Plan that specifies the approach and sequence of the demolition of the entire structure to be removed along with a list of equipment that will be used for the demolition. The demolition plan shall specifically address the demolition of portions of the structure that require dismantling as indicated herein, the need for temporary lateral bracing during demolition (if required), locations requiring shoring (if required), list and operating weights of equipment to be operated on the floors and restrictions as to where they may be operated, locations and limitations of stockpiling debris on concrete slab floors, methodology for removing PCB Bulk Product Waste from the buildings, and management of waste streams, including segregation and handling of PCB Bulk Product Waste, asbestos-containing materials, and other hazardous and non-hazardous materials.

3. Waste Management Plan to indicate the types of wastes to be generated and the

proposed disposal or recycling locations. Include back-up disposal facilities.

4. Copies of any authorizations and permits required to perform the work, including disposal/recycling facility permits.

5. Dust Control Plan to indicate the methods the Contractor will use to limit spreading of fugitive dust to neighboring private residences.

6. Noise Abatement Program to indicate the methods the Contractor will use to keep noise to a minimum. Refer to Section 013543 – ENVIRONMENTAL PROTECTION PROCEDURES for more information.

7. The qualifications of the Massachusetts Registered Professional Engineer analyzing the existing structures.

8. Schedule of Demolition Activities. Indicate the following:

    a. Detailed sequence of demolition and removal work, with early and late starting and finishing dates for each activity. Ensure on-site operations are uninterrupted.

    b. Interruption of utility services. Indicate how long utility services will be interrupted.

    c. Coordination for shutoff, capping, and continuation of utility services.

9. Locations of proposed dust- and noise-control temporary partitions and means of egress.

C. Contract Closeout Submittals (throughout project and prior to authorization of final payment):

1. Records of the amounts of waste generated, by waste type.

2. Evidence of lawful disposal or recycling of all wastes generated.

3. Documentation of underground structures and utilities to remain within the Limit of Work.

D. Inventory: After demolition is complete, submit a list of items that have been removed and salvaged.

E. Landfill Records: Provide trip tickets (receipts) indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1. Comply with submittal requirements in Section 017418 – DEMOLITION WASTE MANAGEMENT AND DISPOSAL.

1.8 REGULATORY REQUIREMENTS

A. The Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section and related sections, including all costs, fees and taxes required or levied. Notify and obtain such permits or approvals from all agencies having jurisdiction over demolition prior to starting work including, but not limited to Fire Departments of the City of Waltham and all other local, state and federal agencies.

B. Obtain demolition permits from the Department of Public Safety (DPS) for the project. DPS requires (780 CMR 116.1) that the Contractor provide a letter from each impacted utility verifying termination of service prior to issuance of the demolition permit.

C. Comply with all applicable federal, state, and local safety and health requirements regarding the demolition of structures and other site features as applicable including but not limited to 780 CMR Section 3307.0 “Protection of Adjoining Property.”

D. Conform to procedures identified in Section 026000 MISCELLANEOUS HAZARDOUS MATERIAL REMOVAL when discovering hazardous or contaminated materials.

E. Conform with the City of Waltham noise ordinance.

1.9 QUALITY ASSURANCE

A. Examination of Existing Conditions: The Contractor shall examine the Specifications and other contract documents for demolition and removal requirements and provisions for new work. Verify all existing conditions and dimensions before commencing work. The Contractor shall visit the site and examine the existing conditions as he finds them and shall inform herself/himself of the character, extent and type of demolition and removal work to be performed. Submit any questions regarding the extent and character of the demolition and removal work in the manner and within the time period established for receipt of such questions during the bidding period.

B. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

C. Massachusetts Registered Professional Engineer Qualifications for Engineer retained by the Contractor to analyze the existing structure: The Registered Professional Engineer shall have at least five (5) years’ experience and three (3) projects in performing demolition support of projects similar to this project, including work in urban areas.

D. Massachusetts Registered Professional Engineer Qualifications: The Registered Professional Engineer shall have at least five (5) years’ experience and three (3) projects in performing pre- and post-construction surveys of projects similar to this project, including work in urban areas, and a record of performance in completing condition surveys of similar types of structures and buildings. The Professional Engineer shall have structural and demolition expertise.

E. Regulatory Requirements: Comply with governing USEPA and MassDEP notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

F. Standards: Comply with ANSI A10.6 “Safety Requirements for Demolition Operations” and NFPA 241 “Standard for Safeguarding Construction, Alteration, and Demolition Operations.”

G. Pre-demolition Conference: Conduct conference at the Site. Review methods and procedures related to demolition including, but not limited to, the following:

1. Inspect and discuss condition of buildings to be demolished.

2. Review structural load limitations of existing structures. The Contractor shall present their structural engineer’s assessment of what equipment can be safely driven, operated, or placed on the existing structure; where the equipment can be safely driven, operated, or placed on the existing structure; how floor areas that cannot support the demolition equipment shall be identified and access to them shall be restricted, and limits for stockpiling of debris on the existing structure.

3. Review and finalize demolition schedule, Demolition Plan, and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review Dust Control Plan

5. Review Noise Abatement Program

6. Review the Self-Implementing Work Plan submitted to EPA, as well as, Addenda, EPA comments, approvals, conditions, and demolition procedures that are to be used to comply with the Plan.

1.10 LEAD-BASED PAINT

A. Lead-containing paint may be present on components located throughout the buildings to be demolished. However, lead abatement of these components shall not be required for performance of the demolition work outlined therein.

B. Removal of lead paint will be performed at the Contractor’s own expense in accordance with applicable OSHA requirements. No additional compensation shall be granted for any engineering control methods employed by the Contractor for compliance with this Section, OSHA or other applicable requirements.

C. The CONTRACTOR shall be advised that testing has been conducted of representative painted/coated materials existing at the Site and these materials may contain lead. The CONTRACTOR and all subcontractor shall at all times be in compliance with OSHA regulation 29 CFR1926.62 Lead in Construction: Interim Final Rule as well as other applicable regulatory requirements and other applicable portions of the contract documents.

PART 2 – PRODUCTS

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 that shall not interfere with the operation of others at the Site or with employees' access and safety. The storage area(s) shall be proposed by the Contractor and approved by the Designer.

B. All materials shall be delivered to the Site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description. No damaged or deteriorating materials shall be used.

C. Damaged or deteriorated materials shall not be used and shall be promptly removed from the Site.

D. All materials and equipment shall comply, at a minimum, with all sections of these specifications, applicable federal and state regulations and policies.

2.2 MATERIALS

A. Waste containers shall be suitable for loading, temporary storage, transport and unloading of selected demolition waste without risk of release to the Site and environment. Waste containers shall be suitable for transportation in conformance with all applicable Federal and State required laws, regulations, and policies.

2.3 SAFETY SUPPLIES AND EQUIPMENT

A. All workers shall be provided with suitable personal protection equipment as specified in the Contractor's Health and Safety Plan. This equipment shall include disposal coveralls, head protection, foot coverings, gloves, and eye protection. Minimum respiratory protection shall be compliant with current OSHA regulations.

B. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.

PART 3 - EXECUTION

3.1 GENERAL

A. Verify site conditions before proceeding with demolition work. Field-check and inspect structures and utilities prior to start of work and notify the Designer in writing of any hazardous conditions and/or discrepancies. Refer to Section 311000 – SITE CLEARING for additional requirements.

1. Unknown Site Conditions - The information provided in the Specifications is believed accurate, but the Contractor should field verify all information. The Contractor shall bear full responsibility for obtaining all locations of underground structures (utilizing the services of a utility locating subcontractor), utilities and their connections. Services to buildings outside the Limits of Work shall be maintained and all resulting costs or charges due to interruption of these utilities shall be the responsibility of the Contractor.

2. Interior Elements - Interior features including but not necessarily limited to structural elements, walls, partitions, equipment, piping, finishes, and other building facilities must be visually inspected prior to submittal of bid, and again prior to initiation of on-site work. The Contractor shall be responsible for performing its own inspection and appraisal of all features and facilities to be demolished or removed for salvage. The Contractor shall also investigate to assure itself of the condition of the work to be demolished and shall take all precautions necessary to ensure safety of people and property.

B. The demolition of the buildings, underground utilities and related appurtenances shall be accomplished by methods which will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place. In the event that damage occurs to surrounding structures, utilities, or any other items, the contractor shall promptly repair the damage at his own expense. All debris shall be promptly and properly managed as the demolition progresses. Construct and/or prepare material Staging/Stockpile areas as required at locations approved by the Designer and the City of Waltham.

3.2 WORK RESTRICTIONS

A. The use of burning is not permitted.

B. The use of explosives is not permitted.

C. The contractor shall not “pancake” the floors as part of the demolition. That is, the Contractor shall not take down portions of the building by allowing upper floors to fall on lower floors in a manner that causes lower floors to collapse.

D. Do not crush or pulverize demolished PCB Bulk Product Waste concrete and masonry materials on site. Do not separate steel reinforcement from concrete and masonry members on site. Divide concrete members only to the largest size that is practical for loading onto

trucks for removal from the site. PCB Bulk Product Waste masonry and concrete must be removed and disposed as required in Section 025110.

E. Refer to Section 011000 – SUMMARY.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities. Damage or impact to any public or private property including sidewalks, roadways, landscape areas, or buildings/structures will be immediately repaired at no cost to the City of Waltham.

1. Comply with requirements for access and protection specified in Section 015000 - TEMPORARY FACILITIES AND CONTROLS.

2. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the City of Waltham. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

3. Protect existing site improvements and appurtenances to remain.

B. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area.

1. Erect temporary protection, such as walks, fences, and barriers. Provide temporary barricades as required to limit access to demolition areas. Refer to Section 015000 - TEMPORARY FACILITIES AND CONTROLS for additional requirements for fencing and temporary barricades.

C. Install OSHA compliant guardrails at all applicable areas.

D. Drain, purge, or otherwise remove, collect, and legally dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations.

E. Pre-clean buildings of miscellaneous solid waste in preparation for asbestos abatement, PCB remediation, and hazardous materials removal.

F. Demolition activities in the building shall not be initiated until the requirements of Section 311000 – SITE CLEARING, Section 025000 - ASBESTOS REMOVAL and RELATED WORK, Section 028433 – REMOVAL OF PCB CONTAINING CAULK MATERIALS, and Section 026000 - MISCELLANEOUS HAZARDOUS MATERIAL REMOVAL have been satisfied.

G. Utilities:

1. Notify Dig Safe to request a utility mark-out for the Site prior to performing any demolition work. Retain a private utility marking contractor to locate and mark all utilities at the buildings to be demolished.

2. Terminate utilities serving the buildings prior to commencing demolition. Refer to Section 311000 — SITE CLEARING for additional requirements.

H. Wildlife Control

1. The CONTRACTOR shall implement the requirements of Section 015716 – TEMPORARY PEST CONTROL prior to starting demolition activities.

2. Remove from structures all rodents and other animals prior to demolition.

3. Removal methods shall prevent infestation of adjoining properties.

3.4 HAZARDOUS MATERIALS

A. Hazardous Materials

1. Prior to demolition, remove asbestos-containing materials, oil, and other hazardous materials in accordance with Section 013543, Section 025000, Section 025110, Section 026000, and Section 028433.

B. Biological

1. The Contractor is hereby notified that there are localized occurrences of mold, mildew and bird guano on the structures to be demolished. Inhalation of these materials could present a hazard to workers.

2. The Contractor shall perform abatement, debris removal, and demolition activities in a manner that prevents workers exposure to airborne pathogens and biological matter.

3. The Contractor is responsible for the lawful collection, characterization and disposal of all biological substances on surfaces in accordance with USEPA and MassDEP Regulations.

C. Lead Paint

1. A number of state, federal and local agencies regulate work that involves lead paint. The Contractor is hereby notified that there are paint coatings on the structures to be demolished that contain lead. This lead could present a hazard to workers and requires regulatory compliance with 29 CFR 1926.62 “Lead in Construction.”

2. Of specific concern is the cutting of steel components using torch methods. If the Contractor intends to torch-cut painted steel, lead paint must be removed from the area to be cut with a chemical stripper or other means prior to cutting. Sufficient paint must be removed from the area to prevent volatilization of lead during the heating of the steel. Other methods of controlling worker exposure to lead will be acceptable provided that they are addressed in the Contractor’s “Lead Exposure Plan” and that they meet the requirements of 29 CFR 1926.62.

3. The Contractor is responsible for the lawful collection, characterization and disposal

of all paint chip debris and flaking paint on surfaces in accordance with USEPA and MassDEP Regulations.

4. Where activities may generate leaded dust or impact a leaded surface, regulate work area so that dust migration is contained properly within the regulated area. Once the work is complete, properly clean up and dispose of leaded dust and materials.

D. Oil and Hazardous Material Contamination

1. Contaminated soil may be encountered during foundation excavation or at other areas of the site. In the event that contaminated soil is encountered, handle such material in accordance with State and Federal Regulations.

2. The Contractor working in areas of the Site where contamination may be encountered shall be appropriately trained, as required in the Contractor's Health and Safety Plan.

3. When working in areas of the site where contamination is likely to be encountered, the Contractor's Site Safety Officer shall monitor the work area in accordance with the Contractor's Health and Safety Plan.

3.5 UNANTICIPATED ASBESTOS AND HAZARDOUS MATERIALS DISCOVERY

A. If unanticipated asbestos-containing materials or other Hazardous Materials not included in Contract are discovered at any time during the course of work, the Contractor shall cease work in the affected areas only and continue work in other areas, and at the same time notify the City of Waltham and the Designer of such discovery. Do not proceed with work in such affected areas until written instructions are received. If removal is required, payment will be made in accordance with the contract unit prices bid for each respective material. In the absence of unit prices, costs shall be negotiated or otherwise established prior to commencement of removal, in accordance with provisions of the Contract.

3.6 DEMOLITION

A. General Requirements

1. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the Site.

2. Coordinate all power and fire alarm isolation with the appropriate representatives.

3. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

4. Conduct demolition operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

5. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by the Designer, OSHA or other authorities having jurisdiction.

6. Protect existing site improvements and appurtenances to remain.

7. Strengthen or add new supports when required during progress of demolition.

8. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

9. Maintain adequate ventilation when using cutting torches. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

10. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

11. Locate demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

12. Dispose of demolished items and materials promptly. Comply with requirements in Section 017418 - DEMOLITION WASTE MANAGEMENT AND DISPOSAL and Section 028100 – MANAGEMENT AND DISPOSAL OF WASTE STREAMS.

13. The demolition of the columns, beams, and portions of floor/ceiling slabs that are classified as PCB Bulk Product Waste shall use methods that reduce the impact on the PCB Bulk Product Waste sites as much as feasible and insures the minimum amount of dust generation. The details of the means and methods shall be included as a separate section within the Demolition Plan prepared in accordance with applicable sections of these Specifications.

14. Intentional collapse or explosive demolition practices are strictly forbidden on this project.

15. Ladders and/or scaffolds to be utilized throughout this project shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

16. Work performed at heights exceeding six feet (6’) shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

B. Selective Demolition

1. See Section 024200 – SELECTIVE DEMOLITION

C. Structure Demolition

1. After completion of selective demolition, demolish and completely remove the existing building and structures within the Limit of Work unless otherwise noted on the Drawings. Structure demolition shall include the demolition of all structural and remaining non-structural building elements, including mechanical systems, equipment, other items within the building, all underslab utilities, and appurtenances and ancillary components within, and fixed to, the building. All remaining equipment and other items within the building shall be demolished as required and removed for reuse, recycling, or lawful disposal.

2. All building foundation components and related elements including floor slabs shall be completely removed unless other noted on the Drawings.

3. Ensure no unstable building elements are left unsupported. Place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this Contract. During demolition, the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, or other structural element shall be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

4. Material Segregation

5. See Section 028100 – MANAGEMENT AND DISPOSAL OF WASTE STREAMS for material segregation requirements.

E. Concrete and Masonry

1. Rubble shall not be used as backfill on the site.
2. For additional requirements, See Section 3.2.

F. Miscellaneous Site Demolition

1. Remove and properly dispose of all miscellaneous debris, miscellaneous solid waste, garbage, abandoned supplies, brush, stumps, equipment, or other materials located within the Limit of Work, including the interior of the buildings to be demolished.

3.7 DISPOSAL

A. See Section 028100 – MANAGEMENT AND DISPOSAL OF WASTE STREAMS for disposal requirements.

3.8 BACKFILLING

A. Backfill Material and Compaction:

1. Conform to Section 310000 EARTHWORK.

3.9 DOCUMENTATION

A. Document the project as required under Section 310000 EARTHWORK.

3.10 DUST CONTROL

A. The Contractor shall implement fugitive dust suppression to prevent unacceptable levels of dust resulting from demolition operations or other activities required by the Contract. It shall be the Contractor's responsibility to supervise fugitive dust control measures and to visually monitor airborne particulate matter. Comply with applicable provisions of Section 013543 - ENVIRONMENTAL PROTECTION PROCEDURES and Section 015000 - TEMPORARY FACILITIES AND CONTROLS.

B. Refer to Section 015000 for requirements related to the source of water for dust control.

3.11 NOISE AND VIBRATION CONTROL

A. Refer to Section 013543 – ENVIRONMENTAL PROTECTION PROCEDURES for more information.

3.12 PROTECTION

A. Protect site features, vegetation and adjacent property as indicated in Section 311000 SITE CLEARING

B. Protect grass and trees that are not in the immediate vicinity of structures, roads or utilities to be demolished. Only remove those grasses, trees, shrubs and other vegetation necessary to complete the work. The Contractor is responsible for proper disposal of all trees and other vegetation removed.

3.13 CLEANUP

A. Remove all debris, residuals, and materials at the conclusion of demolition activities.

B. Additional requirements are specified in Section 017700 — CONTRACT CLOSEOUT.

END OF SECTION

SECTION 024200

SELECTIVE DEMOLITION

PART 1- GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION I – GENERAL REQUIREMENTS, which are hereby made a part of this Section of Specifications.

1.2 DESCRIPTION OF WORK

A. The CONTRACTOR shall provide all labor, materials, tools, equipment, services and incidentals which are necessary or required to perform the work of this section in accordance with all applicable governmental regulations, industry standards and codes and these Specifications. The work of this Section, includes, but is not limited to the following:

1. Selective demolition, decontamination, and on-site management and storage of selected components of the buildings.

2. The items to be selectively removed are shown include:

- Expansion joints;
- Remaining plaster ceilings, soffits, associated lathe, brackets, and ties;
- Ceramic wall tiles;
- Ceramic floor tiles;
- Interior gypsum partition walls, studs, acoustical ceilings, doors, frames, and fixtures;
- Piping, fiberglass insulation;
- HVAC ductwork;
- Roofing and associated flashing, curbing, penetrations, insulation, (multiple layers of roofing) down to the concrete roof deck;
- Vinyl/rubber flooring and adhesives;
- Electrical wiring, conduit, and ancillary equipment;
- Plaster and lathe;
- Plywood and wood debris;
- Cardboard boxes and miscellaneous rubbish and debris;
- Elevator cabs and all associated equipment;
- Cooling towers and associated piping and equipment;
- Roof air conditioning condensing units, roof vents, roof exhaust vents and ancillary equipment;

B. The City of Waltham will provide an Environmental Consultant to monitor the activities of the Contractor. Environmental sampling, including ambient air sampling and verification testing of cleaned nonporous materials shall be conducted by the Environmental Consultant throughout the project as deemed necessary.

C. The buildings have passenger elevators. The elevators are out of service and are not available for use. Based on direction from the Department of Public Safety the elevators must remain out of service, with the fuses removed and main line disconnects maintained in the off position.

D. Related Work: The following items are not included in this Section and will be performed under the Designated Sections:

1. Section 015000: TEMPORARY FACILITIES.
2. Section 024100: BUILDING AND ANCILLARY STRUCTURES DEMOLITION
3. Section 025110; CONCRETE AND MASONRY DEMOLITION
3. Section 028100: MANAGEMENT AND DISPOSAL OF WASTE STREAMS
4. Section 028433: REMOVAL OF PCB CONTAINING CAULK MATERIALS

1.3 SCHEDULE AND SEQUENCING

A. Selective demolition will precede general building demolition and as such, the schedule for selective demolition is strictly governed by the allowable time mandated by the City of Waltham.

B. The Contractor shall not perform selective demolition activities until painting of PCB Bulk Product Waste masonry and concrete, asbestos abatement, and miscellaneous hazardous materials removal has occurred, unless otherwise approved or directed by the City of Waltham and the Designer.

C. The Designer will confirm that required painting of PCB Bulk Product Waste masonry and concrete, asbestos abatement, and PCB-remediation activities have been completed and that clearance samples have been collected and shown to be within the applicable standards.

D. The Contractor shall develop a schedule for each phase of the work for discussion and finalization at the Pre-Construction Conference in cooperation with the City of Waltham and the Designer. The City of Waltham and the Designer may choose to alter the work sequence as required.

E. The Contractor shall update the schedule and submit any schedule changes for review by the Designer at the weekly construction meetings.

1.4 SECTION INCLUDES

A. Regulatory Requirements

B. Submittals

C. Products

D. Examination

E. Employee Protection

F. Establishment of Frame Removal Work Areas

G. Establishment of Door Frame Decontamination Work Areas

H. General Requirements

I. Selective Demolition Procedures

J. Frame Relocation

K. Frame Decontamination

L. Certification of Remediation

M. Waste Management

N. Restoration

1.5 REGULATORY REQUIREMENTS

A. The Work of this Section shall be performed in accordance with all applicable Federal, State, and local regulations, laws, codes and ordinances governing the handling, decontamination, and management of contaminated materials, demolition debris, and solid waste.

B. The Contractor shall adhere to all permit requirements or inference in any Submittal document, approval letter or other correspondence.

1.6 SUBMITTALS

A. The Contractor shall submit each item in this Article according to the Conditions of the Contract and Section 013300.

B. Product data, catalog sheets, specifications, and application instructions for any products used.

C. Other project-wide submittals are identified and specified in Section 028100.

1.7 PROJECT CONDITIONS

A. The City of Waltham assumes no responsibility for actual condition of portions of buildings to be selectively demolished.

B. Conditions existing at time of inspection for bidding purpose will be maintained by the City of Waltham as far as practical.

C. Asbestos: Asbestos and hazardous materials may be present in the portions of buildings to be selectively demolished. Copies of information regarding the presence of asbestos and hazardous materials are attached in Attachments A, B, and C. The Contractor shall examine the information to become aware of locations where asbestos and hazardous materials are present.

D. Asbestos abatement and hazardous material removal is specified elsewhere in the Contract Documents. PCB remediation activities are specified elsewhere in the Contract Documents.

E. Do not disturb asbestos, any material suspected of containing asbestos, PCBs, or hazardous material except under the procedures specified elsewhere in the Contract Documents.

PART 2- PRODUCTS

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 that shall not interfere with the operation of others at the Site or with employees' access and safety. The storage area(s) shall be proposed by the Contractor and approved by the Designer.

B. All materials shall be delivered to the Site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description. No damaged or deteriorating materials shall be used.

C. Damaged or deteriorated materials shall not be used and shall be promptly removed from the Site.

D. All materials and equipment shall comply, at a minimum, with all sections of these specifications, applicable federal and state regulations and policies.

2.2 MATERIALS

A. Waste containers shall be suitable for loading, temporary storage, transport and unloading of selected demolition waste without risk of release to the Site and environment. Waste containers shall be suitable for transportation in conformance with all applicable Federal and State required laws, regulations, and policies.

2.3 SAFETY SUPPLIES AND EQUIPMENT

A. All workers shall be provided with suitable personal protection equipment as specified in the Contractor's Health and Safety Plan. This equipment shall include disposal coveralls, head protection, foot coverings, gloves, and eye protection. Minimum respiratory protection shall be compliant with current OSHA regulations.

B. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.

2.4 TOOLS AND EQUIPMENT

A. The Contractor shall provide tools and equipment that are suitable for removal of interior and designated exterior materials to be selectively demolished, including but not limited to:

1. Electrical equipment, protective devices and power cables shall conform to all applicable codes.

2. Low-pressure garden sprayers, in sufficient quantity and suitable for application of wetting agent/surfactant, shall be used.

3. Ladders, man-lifts, scissor lifts, and/or scaffolds of adequate length, strength and

sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.

PART 3- EXECUTION

3.1 EXAMINATION

A. Perform a visual survey of each work area and review conditions at the site for safety reasons

B. Survey existing conditions to determine extent of selective demolition required and to develop appropriate means and methods to access and safely remove the materials.

C. Inventory and record the condition of items to be removed and stored on-site, if any.

D. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 EMPLOYEE PROTECTION

A. The Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

B. The Contractor shall be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA and USEPA standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

C. The Contractor shall install OSHA compliant guardrails in areas where fall hazards exist.

D. All employees of the Contractor who perform selective demolition work shall be properly trained to perform such duties.

E. Posting of regulations: Display the following documents in the clean changing area, in public view, for the full duration of the work:

1. Instructions for removing injured persons from work area.

2. Post emergency action plan at the work site. This plan shall also include telephone numbers for hospital, doctor and Fire Company.

3.3 GENERAL REQUIREMENTS

A. The Contractor shall:

1. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the Site.

2. Coordinate all power and fire alarm isolation with the appropriate representatives.

3. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

4. Conduct selective demolition operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

5. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways during selective demolition, where required by the Designer, OSHA or other authorities having jurisdiction.

6. Protect existing site improvements and appurtenances to remain.

B. Ladders and/or scaffolds to be utilized throughout this project shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

C. Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

3.4 SELECTIVE DEMOLITION PROCEDURES

A. The Contractor shall select means and methods for selective demolition. Means and methods selected shall complete the Work within limitations of governing regulations. Selected means and methods shall provide the least disturbance to the substrate material.

B. Independent of the selected means and methods, the materials to be selectively demolished will be moistened using the wetting agent to minimize dust generation.

C. Clean up immediately after component removals have been completed. Use High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system to remove any dust located behind the component removed.

3.5 PREPARATION

A. Conduct selective demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

B. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the City of Waltham. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

C. Conduct selective demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.

D. Erect temporary protection, such as walks, fences, railings, where required by the Designer. Refer to Section 024100 — BUILDING AND ANCILLARY STRUCTURES DEMOLITION, Section 015000 — TEMPORARY FACILITIES AND CONTROLS, and the Drawings for additional requirements.

E. Protect existing site improvements and appurtenances to remain.

3.6 SELECTIVE DEMOLITION

A. Selectively demolish and remove materials described herein. Use methods required to complete Work within limitations of governing regulations.

B. Proceed with selective demolition systematically, from higher to lower levels. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.

C. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. These devices must be equipped with HEPA filtration if they are used to cut materials with PCB residues above 1 ppm.

D. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

E. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices and a fire watch detail during all flame-cutting operations.

F. Maintain adequate ventilation when using cutting torches.

G. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

H. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact, damage to sidewalk below, or dust generation.

I. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls sidewalks, and sidewalk retaining walls.

J. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.

K. Selectively demolish the surrounding concrete and masonry not to be salvaged, in small sections. Cut concrete and masonry at junctures between demolished and salvaged items, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

3.7 WASTE MANAGEMENT

A. Dispose of all selective demolition waste in accordance with federal, state, and local regulations.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3.8 RESTORATION

A. Contaminated conditions shall be cleaned up immediately.

B. Damages to existing structures and/or features shall be restored to its original conditions or better at the discretion of the City of Waltham.

END OF SECTION

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 buildings 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 Buildings 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.

8. As part of the work will be performed in the winter months, the CONTRACTOR shall be responsible for snow removal as necessary for the removal of asbestos-containing roofing materials, window caulking and glazing materials and other ACM and PACM.

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 CONTRACTOR is advised that paints and debris existing within the buildings and tunnels 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 included in Table 1. 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.

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. Submittals that vary from building to building must be submitted prior to the start of work in the applicable building. Duplication of submittals that are constant from building to building is not required.

C. Abatement Plans using conventional containment and negative pressure shall be submitted on a building-by-building basis prior to work in each building**.** 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.

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.

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.

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.

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:

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 (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.

C. Tunnel and Conduit Coordination

1. The Asbestos Abatement SubCONTRACTOR is responsible for the removal of any asbestos containing pipe insulation up to the outer boundary of the building foundation in any connecting tunnel associated with the project buildings. All piping or conduit will be cut and capped at the outer boundary of the building foundation, and the connecting tunnel will be sealed off. Abatement of any ACM remaining in the connecting tunnel is outside of the scope of this project and will be conducted at a later date when the site is redeveloped.

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 FACILITES

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).

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 HRPA 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 all buildings. 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 buildings 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 in virtually all buildings. 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. Accessible Thermal System Insulation (TSI), Pipe, Fittings, Valves, and Debris

1. The CONTRACTOR shall remove and dispose of all accessible TSI pipe, fitting and valve insulation as identified in the Abatement Schedule in Table 1.

2. The CONTRACTOR will encounter and shall remove TSI under varying building conditions. Virtually all buildings contain TSI in various areas. The TSI is in varying states of disrepair as a result of maturation, delamination, and/or vandalism. TSI debris is co-mingled with plaster, ceiling tiles, trash and general building debris. The TSI contamination exists on carpets and in hallways resulting from maturation, delamination, and/or tracking during vandalism. Some TSI is submerged in water and some is located in tight spaces, concealed in wall and floor cavities and chases. Some TSI is embedded in walls, floors, ceilings, etc.

3. The Abatement Schedule identifies quantities of accessible TSI piping, general locations and general work environment description on a building-by-building basis. Furthermore, approximate quantities are provided for damaged TSI, surface area cleaning, etc. The Asbestos Abatement Subcontractor shall abate all accessible TSI from all areas of the building prior to demolition operations as part of their lump sum bid.

4. In areas of building conduit spaces where limited headroom or the condition of the conduit prevents safe access by workers, as determined by the Consultant, the Asbestos Abatement Subcontractor will be allowed to "wrap and cut" segments of intact TSI pipe insulation while insulation remains on the pipe. The CONTRACTOR shall then transport the cut pipe section to a full containment area and remove insulation from the pipe. The CONTRACTOR shall fine clean pipe and remove from full containment as non-ACM. The CONTRACTOR must ensure the "cutting points" of the pipe are free of ACM prior to cutting. This action is specified for limited areas within crawlspaces or conduits only. In areas with sufficient access and headroom, the abatement of ACM pipe insulation shall follow standard removal practices. The CONTRACTOR will be required to remove asbestos insulation by the glovebag removal methodology to create a clean space to cut the pipe surface.

I. Concealed TSI Pipe, Fittings, Valves and Debris

1. The Asbestos Abatement Subcontractor may encounter and shall investigate all areas of all buildings 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 buildings or 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 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.

J. 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.

L. Bulk Waste Management

2. 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 buildings will not be performed following conventional asbestos abatement, as is typically required.

3. City of Waltham's Asbestos Monitor will be performing continuous air monitoring around the perimeter of designated buildings 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., pipe lagging, floor tile, transite, 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.

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 025110
CONCRETE AND MASONRY DEMOLITION

PART 1- GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION I – GENERAL REQUIREMENTS, which are hereby made a part of this Section of Specifications.

B. Where in the performance of the work, workers, supervisory personnel, Subcontractors, or consultants may encounter, disturb or otherwise function in the immediate vicinity of PCB-containing materials, where appropriate, continuous measures as necessary to protect the public and the environment from the hazard of exposure shall be taken. Such measures shall include the procedures and methods described herein, regulations of the U.S. Occupational Safety & Health Administration (OSHA) and U.S. Environmental Protection Agency (EPA), including the US EPA's PCB Bulk Product Waste Re-interpretation dated October 24, 2012.

1.2 DESCRIPTION OF WORK

A. This Specification Section addresses requirements for the removal of interior and exterior concrete masonry units (CMU), concrete masonry units that form the backup walls to the exterior brick, exterior brick, that are classified as PCB Bulk Product Waste.

B. Transportation and lawful disposal of concrete and masonry that contains PCB concentrations greater than fifty milligrams per kilogram. This material will be considered PCB Bulk Product Waste and managed in accordance with 40 CFR 761. Masonry (CMU and brick) materials, metal channels, ties, conduit, piping, switches, fiberglass insulation, and other porous and non-porous materials, shall be considered PCB Bulk Product Waste and shall be removed and disposed accordingly by the Contractor. Prior to removal, CMU and brick materials classified as PCB Bulk Product Waste shall be fully and completely marked with a bright marking paint. Metal ties and rebar within the PCB Bulk Product Waste removal zone shall also be marked with a bright-colored paint and disposed by the Contractor as PCB Bulk Product Waste.

C. The Contractor shall remove and dispose of the entire façade of the building and dispose of the material as PCB Bulk Product Waste. All CMU associated with the building shall be considered PCB Bulk Product Waste and shall be disposed as such. Columns floor/wall/ceiling slabs in contact with PCB-containing caulk at the building shall be classified as PCB Bulk Product Waste and shall be disposed at an appropriately permitted disposal facility in accordance with the Performance Based Disposal provisions of 40 CFR 761. Concrete pieces shall be removed in sections that are as large as possible to comply with the disposal facility requirements.

D. The Contractor shall develop and implement means and methods to address preparation, painting/marking of surfaces of PCB Bulk Product Waste, removal, segregation, and movement of the waste streams to temporary waste storage areas or disposal transport containers. The

requirements specified herein provide the framework within which the Contractor must comply. All masonry in-fill panels and PCB Bulk Product Waste portions of concrete members must be demolished by having the masonry and concrete fall within the buildings.

E. Prior to demolition of infill panel masonry, the Contractor shall fully and completely paint, with a bright-colored paint, portions of masonry infill panels adjacent to former caulk locations, which is classified as PCB Bulk Product Waste. The Contractor shall also mark, with a bright marking paint, the interior and exterior concrete walls, ceilings and floor slabs, which are classified as PCB Bulk Product Waste. The painted concrete and masonry shall be separated from concrete, brick, and CMU that are not classified as PCB bulk product waste by means and methods selected by the Contractor. The Contractor shall then segregate the painted concrete and masonry from the unpainted concrete and masonry. The painted concrete and masonry shall be managed as PCB Bulk Product Waste. Metal ties and rebar encountered during concrete PCB Bulk Product Waste removal activities shall be marked with a bright-colored paint, segregated during building demolition activities, and disposed by the Contractor as PCB Bulk Product Waste.

F. The CONTRACTOR shall provide all labor, materials, tools, equipment, services and incidentals which are necessary or required to perform the work of this section in accordance with all applicable governmental regulations, industry standards and codes and these Specifications. The work of this Section, includes, but is not limited to the following:

1. Selection of means and methods to perform the outlined procedures.

2. See Section 028100 – MANAGEMENT AND DISPOSAL OF WASTE STREAMS for segregation and disposal requirements.

G. Related Work: The following items are not included in this Section and will be performed under the Designated Sections:

1. Section 015000: TEMPORARY FACILITIES.

2. Section 024200: SELECTIVE DEMOLITION

3. Section 024000: BUILDING AND ANCILLARY STRUCTURES DEMOLITION

4. Section 028100: MANAGEMENT AND DISPOSAL OF WASTE STREAMS

5. Section 028433: REMOVAL OF PCB CONTAINING CAULK MATERIALS

1.3 WORK BY CITY OF WALTHAM's ENVIRONMENTAL CONSULTANT

A. The City of Waltham will provide an Environmental Consultant to monitor the activities of the Contractor. No activity shall be performed until the Environmental Consultant is on-site. Environmental sampling, including ambient air sampling shall be conducted by the Environmental Consultant throughout the project as deemed necessary.

B. The Environmental Consultant will perform ambient air monitoring to assess the effectiveness of dust suppression measures.

C. The Environmental Consultant will collect confirmatory bulk samples, as necessary to validate classification of material as PCB Waste or “clean” material.

D. The Environmental Consultant will inspect work site for conformance with Work Plan and Project Specifications as they relate to environmental matters.

1.4 SCHEDULE AND SEQUENCING

A. The CONTRACTOR shall prepare a schedule and sequencing plan for PCB remediation activities for review by the City of Waltham and the Consultant.

1.5 SECTION INCLUDES

A. Regulatory Requirements

B. Submittals

C. Products

D. Examination

E. Employee Protection

F. Establishment of Regulated Work Area

G. General Requirements

H. Waste Management

1.6 REGULATORY REQUIREMENTS

A. The Work of this Section shall be performed in accordance with all applicable Federal, State, and local regulations, laws, codes, approvals and ordinances governing the handling and management of contaminated materials, demolition debris, and solid waste.

B. The Contractor shall adhere to all permit requirements and shall comply with the requirements of the U.S.E.P.A. during all work.

1.7 SUBMITTALS

A. The Contractor shall submit each item in this Article according to the Conditions of the Contract.

B. Material Safety Data Sheets (MSDS) for wetting agents and paint proposed to identify PCB-Bulk Product Waste, shall be provided to the Designer as part of the PCB Removal and On-Site Management Work Plan.

C. Product data, catalog sheets, specifications, and application instructions for any products used.

D. Other project-wide submittals are identified and specified in Sections 028100.

PART 2- PRODUCTS

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 that shall not interfere with the operation of others at the Site or with employees' access and safety. The storage area(s) shall be proposed by the Contractor and approved by the Designer.

B. All materials shall be delivered to the Site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description. No damaged or deteriorating materials shall be used.

C. Damaged or deteriorated materials shall not be used and shall be promptly removed from the Site.

D. All materials and equipment shall comply, at a minimum, with all sections of these specifications, applicable federal and state regulations and policies.

2.2 MATERIALS

A. Waste containers shall be suitable for loading, temporary storage, transport and unloading of PCB Bulk Product Waste without risk of ripping, rupture, or exposure to persons or emissions to the environment. Waste containers shall be pre-lined and suitable for transportation in conformance with all applicable Federal and state required laws, regulations, and policies. Waste Containers shall conform to the requirements of 40 CFR 761.65(c)(6).

B. Waste containers shall be suitable for loading, temporary storage, transport and unloading of concrete and masonry that is not classified as PCB Bulk Product Waste without risk of ripping and/or rupture.

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 garden sprayer recommended by the surfactant manufacturer.

D. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating ten (10) mil thickness. Ten (10) mil polyethylene sheets shall be reinforced.

E. Six (6) mil polyethylene disposable bags.

F. Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.

G. Preprinted warning signs and labels shall conform with all federal, state, and local codes and regulations. Labeling for Waste Containers shall conform to 40CFR § 761.40 and § 761.45.

H. All forms shall conform to the applicable requirements specified by the appropriate regulation.

I. Any planking, bracing, shoring, and barricades necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.

J. A sufficient supply of disposable mops, rags, and sponges for work area decontamination shall be available.

2.3 SAFETY SUPPLIES AND EQUIPMENT

A. All workers shall be provided with suitable personal protection equipment as specified in the Contractor's Health and Safety Plan. This equipment shall include disposable coveralls, head protection, foot coverings, gloves, and eye protection. Minimum respiratory protection shall be compliant with current OSHA regulations.

B. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.

2.4 TOOLS AND EQUIPMENT

A. The Contractor shall provide tools and equipment that are suitable for preparing the masonry panel, marking the PCB Bulk Product Waste areas of the masonry and concrete, demolition and segregation of the assorted waste streams, including but limited to:

1. Electrical equipment, protective devices and power cables shall conform to all applicable codes.

2. Low-pressure garden sprayer sprayers, in sufficient quantity and suitable for application of wetting agent/surfactant, shall be used.

3. Ladders, man-lifts, scissor lifts, and/or scaffolds of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.

4. Grinders, sanders, chipping hammers, and other mechanical equipment selected by the Contractor necessary to detach masonry panels from surrounding concrete and to separate PCB Bulk Product Waste concrete and masonry from the remainder of the "ABC" material. This equipment shall be equipped with a HEPA filtered vacuum dust collection system. Cowling on the dust collection system for orbital-type tools must be capable of maintaining a continuous tight seal with the surface being abated. Cowling on the dust collection system for reciprocating-type tools shall promote an effective vacuum flow of loosened dust and debris. Inflexible cowlings may be used on flat surfaces only.

5. All vacuum equipment used in the work area shall utilize HEPA filtration systems, 99.97% efficient to 0.3 microns particulate size. All vacuums shall be delivered to the work area with clean waste containers and intact, undamaged HEPA filters installed.

6. Conveyance equipment shall be suitable for on-site movement of the segregated masonry debris to on-site temporary storage area(s) proposed by the Contractor and approved by the Designer. The conveyance method shall minimize exposure to persons or property.

The conveyance equipment shall be secured at all times and access restricted to unauthorized personnel.

PART 3- EXECUTION

3.1 EXAMINATION

A. Survey existing conditions to evaluate the stability of the interior and exterior masonry walls and PCB Bulk Product Waste concrete and to develop appropriate means and methods to access and safely remove these materials.

B. Perform a visual survey of each work area and review conditions at the Site for safety reasons

C. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure.

3.2 EMPLOYEE PROTECTION

A. The Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project

B. The Contractor shall be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA and USEPA standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

C. All employees of the Contractor who perform work removing interior and exterior masonry panels and concrete shall be properly trained to perform such duties.

D. Posting of regulations: Display the following documents in the clean changing area, in public view, for the full duration of the work:

1. Instructions for removing injured persons from work area.

2. Post emergency action plan at the work site. This plan shall also include telephone numbers for the local trauma hospital and Fire Company.

3.3 ESTABLISHMENT OF REGULATED WORK AREAS

A. The Contractor shall establish a Regulated Area through the use of appropriate barrier tape, etc. and control unauthorized access into the area throughout the demolition activity in accordance with the following requirements.

B. The Regulated Area shall include exterior areas within possible fall zones.

C. The Contractor shall install 10-mil reinforced fire retardant polyethylene drop cloths on floors and at the perimeter of the Site buildings to collect debris from demolition operations. The interior floor protection shall extend out 10 feet in all directions from operations at 20-feet in all directions for exterior operations.

D. Signs shall be posted at all approaches to regulated areas so that an employee may read the sign

and take the necessary protective steps before entering the area. These signs shall read:

CAUTION
PCB WORK AREA
HUMAN AND ENVIRONMENTAL TOXIN
AUTHORIZED PERSONNEL ONLY
NO SMOKING OR EATING

E. Implement appropriate engineering controls such as critical barriers, poly drop cloths, negative pressure, local exhaust ventilation, wet dust suppression methods, etc. to prevent the spread of PCB contamination from the Regulated Area.

3.4 GENERAL REQUIREMENTS

A. The Contractor shall:

1. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the Site.

2. Coordinate all power and fire alarm isolation with the appropriate representatives.

3. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

4. Conduct concrete and masonry demolition and segregation operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

5. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways during exterior masonry removal, where required by the Designer.

6. Protect existing site improvements and appurtenances to remain.

7. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of wall components as required.

8. Strengthen or add new supports when required during progress of selective demolition.

B. Ladders and/or scaffolds to be utilized throughout this project shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

C. Work performed at heights exceeding six feet (6’) shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

D. Activity impacting wall panel removal shall be performed in a manner which minimizes the spread of dust contamination and generation of airborne PCB.

3.5 WASTE MANAGEMENT

A. Sealed PCB Bulk Product Waste containers shall be moved to the temporary hazardous waste storage area(s), or loaded out into lined dumpsters that conform to all federal, state, and local laws and regulations governing the storage and transport of TSCA and PCB waste.

B. Conveyance equipment shall be suitable for on-site movement of the masonry and concrete debris to the on-site temporary storage area(s). The conveyance method shall minimize exposure to persons or property. The conveyance equipment shall be secured at all times and access restricted to unauthorized personnel.

C. All waste containers shall indicate the date of generation. Dumpsters that house TSCA or PCB waste must meet all applicable federal, state and local laws and regulations, and must be secured and lined. Open top containers are discouraged, but if they are used, they must be properly secured to prevent rain and/or snow from entering the container during storage and loading. The contractor must indicate in the Work Plan how he will manage this requirement. The containers must be properly labeled and secured at all times to prevent access by unauthorized personnel.

E. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

F. Remove debris from elevated portions of the buildings by hoist, elevator, or other device that will convey debris to grade level.

3.6 RESTORATION

A. Contaminated conditions shall be cleaned up immediately.

END OF SECTION

SECTION 028100

MANAGEMENT AND DISPOSAL OF WASTE STREAMS

PART 1- GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION I — GENERAL REQUTREMENTS which are hereby made a part of this Section of Specifications.

B. Where in the performance of the work, workers, supervisory personnel, Subcontractors, or consultants may encounter, disturb or otherwise function in the immediate vicinity of PCB-containing caulking materials, where appropriate, continuous measures as necessary to protect the public and the environment from the hazard of exposure shall be taken. Such measures shall include the procedures and methods described herein, regulations of the U.S. Occupational Safety & Health Administration (OSHA) and U.S. Environmental Protection Agency (EPA), including the US EPA's PCB Bulk Product Waste Re-interpretation dated October 24, 2012.

1.2 DESCRIPTION OF WORK

A. The Contractor shall furnish all labor, material, tools and equipment necessary for the on-site management, segregation, transportation and disposal of all waste associated with the project. This includes any disposal personal protective equipment and protective sheeting used in minimizing the spread of contamination.

B. Related Work: The following items are not included in this Section and will be performed under the Designated Sections:

1. Section 015000: TEMPORARY FACILITIES.
2. Section 024200: SELECTIVE DEMOLITION.
3. Section 025110: CONCRETE AND MASONRY DEMOLITION.

1.3 SECTION INCLUDES

A. Regulatory Requirements

B. Submittals

C. Products

D. Waste Characterization

E. Waste Segregation

F. Waste Profiles and Manifests

G. Transport of Contaminated Materials

H. Waste Disposal

I. Waste Disposal Documentation

1.4 REGULATORY REQUIREMENTS

A. The Work of this Section shall be performed in accordance with all applicable Federal, State, and local regulations, laws, codes and ordinances governing the handling, transportation, and disposal of hazardous materials, demolition debris, and solid waste.

B. The Contractor shall obtain all Federal, State and local permits required for the transport and disposal of each waste stream. The Contractor shall adhere to all permit requirements or inference in any Submittal document, approval letter or other correspondence.

C. The Contractor shall document that the disposal facilities proposed have all certifications and permits as required by Federal, State and local regulatory agencies to receive and dispose of the various waste streams. Specific receiving facilities are subject to approval by the Designer in accordance with the Contractor's Work Plan submitted under Section 013300.

D. The Contractor shall not dispose of any waste stream at a landfill if a feasible alternative exists that involves the reuse, recycling, destruction, and/or detoxification of the material in accordance with 310 CMR 40.0032(5).

1.5 SUBMITTALS

A. The Contractor shall submit each item in this Article according to the Conditions of the Contract and Section 013300.

B. PCB Removal and On-Site Management Work Plan: The Contractor shall prepare a final detailed PCB-containing material removal work plan within two weeks of receipt of a Notice To Proceed. A draft removal work plan shall be submitted with the Contractor's bid. The work plan shall be prepared in accordance with all applicable referenced standards and shall incorporate a Performance Based Disposal approach as outlined in 40 CFR 761. There will be no Self Implementing Work Plans submitted to EPA for review and approval as part of this Project. The Contractor's work plan shall include, but not be limited to, drawings indicating the location, size, and details of PCB Bulk Product Waste removal areas, staging areas for removal and segregation, location and details of containment, decontamination facilities, sequencing of all remediation activities, work procedures, types of equipment, crew size, and emergency procedures for fire and medical emergencies for each separate activity. The work plan shall include at a minimum:

1. Temporary Hazardous Waste Storage Area The work plan shall include, but not be limited to, a drawing indicating the proposed locations, sizes, and details for temporary hazardous waste storage areas. These area(s) shall be used to temporarily store PCB Bulk Product waste, containers, window frames, door frames, other PCB-containing, PCB-contaminated, and PCB-impacted materials. The temporary areas shall be constructed in accordance with 40 CFR 264.170 et al. and shall contain all required barriers, labeling and signage.

2. PCB Impacted Masonry Removal and Segregation: The work plan shall include, but not be limited to, a drawing indicating the location, size, and details of masonry removal areas (dropcloths, etc.) staging areas for masonry removal and segregation from identified area, location and details of containment, decontamination facilities, sequencing of window/door caulking and glazing removal, work procedures, types of equipment, crew size, and emergency procedures for fire and medical emergencies. The work plan shall also describe the segregation and disposal methodology for remaining brick and CMU in-fill material that is not PCB Bulk Product Waste.

3. Removal/Disposal of Metal and Building Materials in Contact With PCB-containing Caulk, Glazing, and all other PCB-containing materials: The work plan shall include a specific description of the removal and disposal methodology associated with PCB Bulk Product Waste window and door frames, louvers, metal studs, support frames, wiring, conduit, structural steel, foam backer rod, rubber gasketing/backer rods, metal channel with fiberglass insulation, fasteners, ties, rebar, plaster, lathe, plaster framework, piping, ductwork, insulation, fireproofing, concrete, CMU, brick, and any other materials that may be coated with or in contact with PCB-containing caulk or PCB-containing material.

4. Waste Transporter Permit: One copy of transporter's current waste transporter permit.

C. PCB Disposal Plan: The Contractor shall provide a written plan that details his plan for transportation and disposal of PCB-wastes generated during the project. The Plan shall consist, but not be limited, to:

1. The Contractor shall select landfills that are established, fully operational, and in full compliance with all applicable Federal, State and local regulations.

2. The Contractor shall designate one landfill as the primary facility and one as an alternate facility should project conditions require the use of a backup facility. The City of Waltham will not incur any additional costs if an alternate facility is utilized.

3. The Contractor shall submit information for each landfills selected, within 10 days of issuance of the Notice to Proceed as part of its Work Plan. The facility information shall include the following:

a) General Information

1) Facility Name

2) Facility Address

3) Name of Contact Person

4) Title of Contact Person

5) Telephone Number of Contact Person

6) Permit Number

b) The landfills shall specify the volume of material that can be accepted from the site on a weekly and a total basis.

c) The landfills shall provide written confirmation that they are permitted to accept and

will accept the classified waste of the general quality and quantity described by these Specifications.

d) The landfills shall provide a listing of all current and valid permits, licenses, letters of approval, and other authorizations to operate that they hold, pertaining to the receipt and management of the soils or materials specified in this Contract.

e) The Contractor shall submit a complete list of the disposal/landfill facility's permitted allowable containment levels and physical characteristic requirements for contaminated material, and list any required regulatory approvals for individual waste streams.

D. PCB Work Closeout Submittals:

1. Disposal Site Receipts: Copy of waste shipment record and disposal site receipt showing the PCB Bulk Product Waste, PCB Excluded Product Waste, and other PCB and non-PCB impacted materials have been properly disposed of.

1.6 HEALTH AND SAFETY PLAN

A. The Contractor shall prepare a Health and Safety Plan that addresses all site activities and the plan for keeping personnel safe during these Activities. This plan also addresses safe working conditions relative to maintaining safe working conditions relative to chemical constituents in soil, sediment, groundwater and air.

B. The Contractor shall provide the City of Waltham and the Designer with written notice of the existence of said Plan and of his/her communication of said Plan to all relevant workers. Work may not proceed at the Project Site until the Designer receives the written notice.

C. The Contractor's Health and Safety Plan shall be communicated to the City of Waltham and the Designer for informational purposes.

D. The Health and Safety Plan shall specifically address protection of the surrounding residential neighbors during all construction activities and meet applicable requirements.

E. All Contractor's employees (including applicable subcontractors) who shall work or visit the Site, shall be informed of relevant Site procedures and policies by the Contractor and given a briefing on the site Health and Safety Plan before being allowed access to the site.

F. Continuous monitoring shall be performed by the Contractor during all work involving unsafe activities within the active work area and at the Limits of Work.

G. The Contractor shall be liable of any property damage or personal injury resulting from failure by the Contractor to take required or adequate safety precautions, and shall indemnify the City of Waltham, the Designer, and their employees and agents form such failure.

H. Worker's Qualifications Data:

1. Name of each person who will be performing the Work and their employer's name, business address and telephone number.

2. Names and addresses of 3 similar projects that each person has worked on during the past 3

years and documentation of completion of appropriate PCB/Hazardous Waste training program and supervisors with appropriate PCB/Hazardous Waste supervisor training.

3. Documentation of OSHA 40-Hour HAZWOPER Training for all employees and subcontractors to be used for the abatement work, and 8-Hour HAZWOPER Supervisor Training for the designated on-site Health and Safety Officer for the Abatement work.

4. Workers must be trained as per OSHA and EPA requirements, have medical clearance and must have recently received pulmonary function test (PFT) and respirator fit tested by a trained professional.

5. A personal air sampling program shall be in place as required by OSHA. The use of respirators must also follow a complete respiratory protection program as specified by OSHA.

1.7 EMERGENCY PLANNING

A. Description: The Contractor shall prepare an emergency preparedness plan detailing at least the information required in this section and in any applicable federal, state or local regulations.

B. Details of Plan:

1. Emergency planning shall be developed prior to abatement initiation and submitted to the Director for review.

2. Emergency procedures shall be in written form and prominently posted in the clean change area of the worker decontamination area.

3. Emergency planning shall include written notification of police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly barriers that may affect response capabilities.

4. Emergency planning shall include considerations of fire, electrical hazards, slips, trips, and falls, spills or releases of hazardous materials and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.

5. Employees shall be trained in evacuation procedures in the event of work place emergencies.

a) For Non-Life-Threatening Situations: Employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work place to obtain proper medical treatment.

b) For Life-Threatening Injury or Illness: Worker decontamination shall take least priority. After measures to stabilize the injured worker, the injured worker shall be removed from the work place and secure proper medical treatment.

C. Telephone numbers of all emergency response personnel shall be prominently posted in the clean area and equipment room, along with the location of the nearest telephone.

PART 2- PRODUCTS

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 that shall not interfere with the operation of others at the Site or with employees' access and safety. The storage area shall be proposed by the Contractor and approved by the Designer.

B. Damaged or deteriorated materials shall not be used and shall be promptly removed from the Site.

C. All materials and equipment shall comply, at a minimum, with all sections of these specifications, applicable federal and state regulations and policies.

2.2 MATERIALS

A. Warning labeling shall have waterproof print and permanent adhesive 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.

B. Waste containers shall be suitable for loading, temporary storage, transport and unloading of waste streams without risk of ripping, rupture, or exposure to persons or emissions to the environment. Waste containers shall be pre-lined and suitable for transportation in conformance with all applicable Federal and state .required laws, regulations, and policies.

C. Truck Liners shall be pre-formed polyethylene or equivalent with a minimum thickness of 10-mil for all applications.

D. Tape shall be capable of sealing plastic joints. The bonding strength and resulting seal integrity shall not be affected by mist or water or any other materials used in the work area.

E. Trucks placards shall be appropriate for the individual waste streams and shall confirm to US Department of Transportation (USDOT) requirements

F. All forms shall conform to the applicable requirements specified by the appropriate regulation.

2.3 SAFETY SUPPLIES AND EQUIPMENT

A. All workers shall be provided with suitable personal protection equipment as specified in the Contractor's Health and Safety Plan. This equipment shall include disposal coveralls, head protection, foot coverings, gloves, and eye protection. Minimum respiratory protection shall be compliant with current OSHA regulations.

2.4 EQUIPMENT

A. Transportation equipment shall be suitable for loading and transportation of the waste streams without exposure to persons or property. The equipment shall be secured at all times and access restricted to unauthorized personnel.

PART 3- EXECUTION

3.1 GENERAL

A. PCB Bulk Product Waste and adjacent impacted materials 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 including those described in 40 CFR 761.

B. The Contractor shall also ensure that no visible emissions of dust will occur during the disposal of PCB Bulk Product Wastes into appropriate disposal containers. At no time should free liquid waste be generated during the remediation activity.

C. The Contractor is responsible to determine current waste packaging, labeling handling, transportation, disposal, and record-keeping requirements for each waste stream.

D. The Contractor shall exercise care that no unauthorized persons have access to the waste streams either before or during transport.

E. All temporary stored material must be removed from the Site in accordance with applicable regulatory deadlines however, no later than 90 days after the generation date or the completion date of this Contract whichever is sooner.

3.2 WASTE CHARACTERIZATION

A. The Contractor shall be responsible for characterizing each waste stream to obtain approvals for final reuse or disposal of the waste stream. The Contractor shall collect waste samples in accordance with USEPA, MassDEP, and the disposal facility's methodologies, requirements, and procedures.

B. The Contractor shall be required to submit a copy of all analytical results to the Designer within 2 days of receipt of the laboratory report. Analytical data shall be kept confidential, and distributed to the City of Waltham and the Designer.

3.3 MATERIAL SEGREGATION

A. All asphalt and brick rubble shall be separated from wood, mechanical equipment, reinforced concrete and structural steel. Reinforcement in reinforced concrete shall be separated from the concrete offsite. Reinforcement and other steel materials that are PCB Bulk Product Waste must be segregated and disposed of as PCB Bulk Product Waste as required by Section 025110, related sections, and the drawings. Once the reinforcement and concrete are separated offsite, the reinforcement shall be recycled, and the concrete shall be crushed and recycled or disposed of in accordance with applicable regulations. Any oil-stained concrete shall be separated, characterized by the Contractor, and properly disposed of in accordance with applicable regulations. Wood shall be recycled or disposed of offsite by the Contractor. Structural steel, cast iron and other metals shall be removed from the Project Site and recycled unless otherwise required in these Specifications. Prior to demolition by heavy equipment, remove internal metal, wood and mechanical equipment. Reuse, salvage and recycle materials from the demolition to the greatest extent possible.

B. Demolished masonry and concrete shall be segregated into those materials that will be disposed as PCB Bulk Product Waste and other materials disposed of or recycled at an off-site location permitted to accept the material.

C. PCB Bulk Product Waste, ACMs, other hazardous materials, and materials not designated as such

shall be handled and stored as separate waste streams and shall not be co-mingled.

D. Do not stockpile any PCB Bulk Product Waste, and other PCB-impacted waste materials on site, or outdoors. Package such materials for transport immediately after removal from the building.

3.4 WASTE MANAGEMENT

A. Sealed PCB Bulk Product Waste containers shall be moved to the temporary hazardous waste storage area(s), or loaded out into lined dumpsters that conform to all federal, state, and local laws and regulations governing the storage and transport of PCB waste.

B. Conveyance equipment shall be suitable for on-site movement of the masonry and concrete debris to the on-site temporary storage area(s). The conveyance method shall minimize exposure to persons or property. The conveyance equipment shall be secured at all times and access restricted to unauthorized personnel.

C. All waste containers shall indicate the date of generation. Dumpsters that house PCB waste must meet all applicable federal, state and local laws and regulations, and must be secured and lined. Open top containers are discouraged, but if they are used, they must be properly secured to prevent rain and/or snow from entering the container during storage and loading. The contractor must indicate in the Work Plan how he will manage this requirement. The containers must be properly labeled and secured at all times to prevent access by unauthorized personnel.

E. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

F. Remove debris from elevated portions of the buildings by hoist, elevator, or other device that will convey debris to grade level.

3.5 WASTE PROFILES AND MANIFESTS

A. The Contractor shall be responsible for preparing and submitting to the Designer for review all waste profile applications and questionnaires, and coordination with disposal facilities and all Federal and State Environmental Agencies. Waste profile applications and questionnaires shall include a summary of the analytical data and copies of the certified analytical data. All waste profile applications and questionnaires shall be submitted to the City of Waltham and the Designer seven (7) calendar days before the required submission date.

B. The Contractor shall be responsible for preparing all hazardous and non-hazardous material manifests with all applicable analytical backup, notification, and control forms. Draft manifests shall be submitted to the City of Waltham and the Designer seven (7) calendar days before the required transport date.

C. The City of Waltham will be the generator and will sign all hazardous and non-hazardous manifests and/or Waste Shipping Records and waste profile application or questionnaires.

D. PCB Bulk Product Waste shall be transported under a hazardous waste manifest. All other waste streams shall be transported under non-hazardous waste manifests.

E. PCB Bulk Product Waste cannot be disposed within the Commonwealth of Massachusetts. As such, the waste is required to leave the Commonwealth and must be shipped under a hazardous waste manifest with “MA02” as the waste code.

3.6 TRANSPORT OF CONTAMINATED MATERIAL

A. The Contractor shall not be permitted to transport contaminated materials off-site until all disposal or recycling facility documentation has been received, reviewed, and accepted by the City of Waltham and the Designer.

B. The Contractor shall use licensed hazardous material transporters in conformance with the Massachusetts Hazardous Material Regulations as specified in 310 CMR 30.000 et. al. The hauler(s) shall be licensed in all states affected by transport.

C. Waste Transporters are prohibited from "back hauling" any freight after disposition of the Commonwealth waste stream until decontamination of the vehicle and/or trailer is performed.

D. The Contractor shall provide the Designer with the estimated total volume of each load or container shipment and provide an accurate count of each type of container and/or load before the waste is removed from the Site. The Contractor shall complete appropriate documentation for each load

E. The Designer and/or Resident Engineer shall confirm the volume of each container or load removed from the Site.

F. The Contractor shall remove waste containers from the work areas under observation of the Designer.

G. The Contractor shall transport contaminated materials from the Site to the disposal or recycling facility in accordance with all United States Department of Transportation (DOT), USEPA, and MassDEP regulations.

H. The Contractor shall maintain proper follow up procedures to assure that waste materials have been received by the designated disposal facility in a timely manner and in accordance with all Federal, State, and local regulations.

I. The Contractor shall be responsible for ensuring that free-liquid does not develop during transport. "Wet materials" shall not be loaded for transport. The Contractor shall be responsible to properly dispose of any free liquids that may result during transportation.

3.7 WASTE DISPOSAL

A. Remove all remediation and demolition waste from the Site for disposal. Legally dispose of all materials from demolition (i.e. metals, wood, oil stained concrete, miscellaneous waste, etc.) as well as all equipment and other materials that are on the interior and exterior of the buildings. The disposal site shall be approved by the Designer and the City of Waltham. The loading of demolition materials for disposal shall be performed in a manner that prevents materials and activities from generating excessive dust and ensure minimum interference with roads, sidewalks and streets both onsite and offsite. The Contractor is encouraged to recycle the removed existing shoring towers.

B. Waste disposal will be in accordance with applicable state and federal regulations, including 40 CFR 761. PCB Bulk Product Waste and PCB Excluded Product Waste will be disposed at licensed and permitted facilities in accordance with USEPA regulations.

C. Masonry material that is not considered PCB Bulk Product Waste shall be considered PCB-Excluded Product if it contains PCBs in concentrations greater than 2ppm and thus cannot be disposed within the Commonwealth of Massachusetts. The masonry material shall be disposed at an out of state

facility permitted to accept materials with the PCB concentrations present.

D. All wash waters are a TSCA regulated waste unless the concentrations of PCBs in the wash water are less than or equal to 0.5 ug/L (approximately 0.5 ppb). Wash water with concentrations greater than 0.61 ug/L must be managed and disposed in accordance with 40 CFR § 761.79(b)(l), 40 CFR 761(b)(1) or 40 CFR § 761.70. A Waste Manifest must be used to document transportation of wash water with concentrations greater than 0.5 ug/L off site. No on-site treatment of the wash water will be permitted.

E. Under 40 CFR § 761.79(b)(1) wash water can go to a waste water treatment facility as long as the wash water PCB concentration is not greater than the discharge limit published in the facility's permit. Prior to disposal, a sample of the wash water will be collected for PCB and other analysis that might be required for acceptance at a disposal facility and delivered under chain of custody to a state certified laboratory for analysis.

3.8 WASTE DISPOSAL DOCUMENTATION

A. Provide evidence, on an on-going basis, that demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Transport of all materials off-site shall be in accordance with applicable Department of Transportation Regulations. All materials leaving the site shall become the property of Contractor.

B. The Contractor shall provide certified tare and gross weight slips for each load received at the designated facility, which shall be attached to each returned manifest. The submission of the manifests shall be within the 30-day time period specified by the USEPA.

C. The Contractor shall submit to the City of Waltham and the Designer, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and disposed, at the approved receiving facility. The documentation shall include the following, as a minimum.

1. Documentation shall be provided for each load from the site to the disposal facility, including all manifests and any other transfer documentation as applicable.

2. Original signed copies of generator copies of the hazardous and non-hazardous material manifest

3. All documentation for each load shall be tracked by the original manifest document number that was assigned.

D. Payment for waste disposal is based on certified weight slips collected at the disposal facility No payment for disposal will be made until this documentation is received by the City of Waltham.

END OF SECTION

SECTION 028433

REMOVAL OF PCB CONTAINING CAULK MATERIALS

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 V of the CONTRACT AND GENERAL CONDITIONS.

C. Where in the performance of the work, workers, supervisory personnel, Subcontractors, or consultants may encounter, disturb or otherwise function in the immediate vicinity of PCB-containing caulking materials, where appropriate, continuous measures as necessary to protect the public and the environment from the hazard of exposure shall be taken. Such measures shall include the procedures and methods described herein, regulations of the U.S. Occupational Safety & Health Administration (OSHA) and U.S. Environmental Protection Agency (EPA), including the US EPA's PCB Bulk Product Waste Re-interpretation dated October 24, 2012.

1.2 DESCRIPTION OF WORK

A. The Contractor is responsible for verifying locations and quantities of caulk classified PCB Bulk Product Waste. Existing and previous locations of caulk on interior and exterior of the buildings shall be verified through a site walkthrough. Caulk materials and materials to which caulk was applied are classified as PCB Bulk Product Waste and must be removed and disposed as such by the Contractor.

B. The Contractor shall provide all labor, materials, tools, equipment, services, testing, and incidentals which are necessary or required to perform the work of this Section in accordance with applicable governmental regulations, industry standards and codes, and these Specifications. The work of this Section includes but is not limited to the following:

1. Removal, management, transportation and off-site disposal of all interior and exterior PCB-containing caulk between masonry, concrete, window surrounds, metal frames, metal flashing, and door surrounds throughout the Site buildings. Removal of all interior and exterior caulk at the building and exterior caulk. These materials and the substrate to which they are adhered shall be considered as PCB Bulk Product Waste and managed in accordance with 40 CFR 761.

2. Specific PCB Remediation Scope of Work:

   Removal and disposal as PCB Bulk Product Waste in accordance with a Performance Based Disposal, all window and door caulking, window & door frames, seam & expansion joint caulking, and exterior brick masonry.

   Removal and disposal as PCB Bulk Product Waste in accordance with a Performance Based Disposal, all interior and exterior window caulking, door caulking associated with exterior doors, window & door frames, seam & expansion joint caulking, pre-cast & cast in place concrete, and exterior brick masonry.

   Removal and disposal as PCB Bulk Product Waste in accordance with a Performance Based Disposal, all interior and exterior window caulking, interior and exterior door caulking, interior CMU block walls, window & door frames, seam & expansion joint caulking, pre-cast & cast in place concrete, and exterior brick masonry.

3. Removal, management, transportation and off-site disposal of all interior and exterior PCB-containing caulk between masonry, concrete, window surrounds, doors, metal frames, metal flashing, piping, throughout the building. Removal, management, transportation and off-site disposal of all exterior PCB-containing caulk between masonry, concrete, window surrounds, and window frames on the exterior of the building. Removal of all interior and exterior windows, frames, doors, and from the building. These materials and the substrate to which they are adhered shall be considered as PCB Bulk Product Waste and managed in accordance with 40 CFR 761. All exterior brick masonry shall be removed and disposed as PCB bulk product waste. Door caulk at the Building is also an asbestos-containing material that must be removed using manual labor prior to demolition of the brick façade.

4. Removal, management, transportation, and off-site disposal as PCB Bulk Product Waste of all interior and exterior building materials in contact with PCB-Bulk Product Waste caulking, including but not limited to, window and door frames, louvers, metal studs/framing, wood/plywood, support frames, wiring, filler material, conduit, structural steel, foam backer rod, rubber gasketing/backer rods, metal channel with fiberglass insulation, fasteners, ties, rebar, plaster, lathe, plaster framework, piping, ductwork, insulation, fireproofing, concrete, CMU, concrete, and brick. No metal decontamination will be allowed under this contract.

5. Transportation and lawful off-site recycling and/or disposal of concrete and masonry that contains PCB concentrations of less than fifty milligram per kilogram.

6. Transportation and lawful disposal of concrete and masonry (including CMU) that contains PCB concentrations greater than fifty milligrams per kilogram. This material will be considered PCB Bulk Product Waste and managed in accordance with 40 CFR 761. Prior to removal, CMU and brick materials classified as PCB Bulk Product Waste shall be fully and completely marked with a bright marking paint. Metal ties and rebar within the PCB Bulk Product Waste removal zone shall also be marked with a bright-colored paint and disposed by the Contractor as PCB Bulk Product Waste.

7. Prior to removal, concrete materials classified as PCB Bulk Product Waste, as well as, metal ties and rebar, shall be marked with a bright marking paint.

8. Removal of PCB impacted concrete columns, floor and ceiling slab sections, and spandrel beams associated with the Building that are in contact with PCB-containing

caulk and disposal as PCB Bulk Product Waste under the performance-based disposal provisions of 40 CFR 761. Prior to removal, concrete materials classified as PCB Bulk Product Waste, as well as, metal ties and rebar, shall be marked with a bright marking paint.

9. Removal, handling, transportation, and lawful disposal of all disposable personnel protection equipment and incidental materials.

10. Provide the City of Waltham and the Designer with required waste disposal documentation. Payment will be made only upon receipt of documentation from the disposal facility.

11. Removal of all interior and exterior asbestos-containing materials (ACMs), hazardous materials, containerized wastes, and proper packaging and off-site disposal.

12. Contractor is responsible for conducting a thorough walkthrough of the building to identify locations on the interior and exterior of the building where caulk is present or formerly present.

13. Complete removal and disposal of the building structure, foundation, footings, as outlined in these Specifications.

14. Excavation, site clearing, and site work as outlined in these Specifications.

15. Demobilization of all equipment and materials from the Site.

C. Related Work: The following items are not included in this Section and will be performed under the Designated Sections:

1. Section 023000: SUMMARY OF EXISTING CONDITIONS.

2. Section 024200: SELECTIVE DEMOLITION.

3. Section 028100: TRANSPORTATION AND DISPOSAL OF WASTE STREAMS.

1.3 SCHEDULING AND SEQUENCING

A. The work specified in this section will precede building demolition and as such the schedule for this work is strictly governed by the allowable time mandated by the City of Waltham.

B. The Contractor shall not perform the work specified in this section until asbestos abatement and miscellaneous hazardous materials removal in has been completed.

C. The Designer will confirm that the work specified in this section has been completed by visual inspection.

D. The Contractor and the Designer shall develop a schedule for each phase of the work at the Pre-Construction Conference. The Designer or the City of Waltham may choose to alter the work sequence as required.

E. The Contractor shall update the schedule and submit any schedule changes for review by the Designer at the weekly construction meetings.

1.4 SECTION INCLUDES

A. Regulatory Requirements

B. Submittals

C. Products

D. Examination

E. Employee Protection

F. Establishment of Regulated Work Area

G. General Requirements

H. PCB-Containing Caulk Removal

I. Certification of Removal

J. Waste Management

K. Restoration

1.5 REGULATORY FRAMEWORK

A. The Work of this Section shall be performed in accordance with all applicable Federal, State, and local regulations, laws, codes and ordinances governing the removal, handling, and storage of PCB Bulk Product Waste in accordance with 40 CFR 761.

1.6 SUBMITTALS

A. Submit each item in this Article according to the Conditions of the Contract and Section 013300.

B. Product Data: Catalog sheets, specifications, and application instructions for any products used.

C. Other project-wide submittals are submitted as specified in Section 028100.

D. Detailed Contractor's Work Plan for PCB Removal activities with appropriate detail for submission to the Designer for approval. No work plans will be filed with EPA for this project.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description. No damaged or deteriorating materials shall be used.

B. All materials or equipment delivered to the Site shall be unloaded, temporarily stored, and transferred to the work area in a manner that shall not interfere with the operation of others at the Site or with employees' access and safety. The storage area(s) shall be proposed by the Contractor and approved by the Designer.

C. Damaged or deteriorated materials shall not be used and shall be promptly removed from the Site.

D. All materials and equipment shall comply, at a minimum, with all sections of these specifications, applicable federal and state regulations and policies.

2.2 MATERIALS

A. Waste containers shall be suitable for loading, temporary storage, transport and unloading of waste streams without risk of ripping, rupture, or exposure to persons or emissions to the environment. Waste containers shall be pre-lined and suitable for transportation in conformance with all applicable Federal and state required laws, regulations, and policies. Waste Containers shall conform to the requirements of 40 CFR 761.65(c)(6).

B. 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 garden sprayer recommended by the surfactant manufacturer.

C. Reinforced fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating ten (10) mil thickness.

D. Six (6) mil polyethylene disposable bags.

E. Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.

F. Preprinted labels and warning signs shall be used and shall conform with all federal, state, and local codes and regulations. Labeling for Waste Containers shall conform to 40 CFR 761.40 and 761.45.

G. All forms shall conform to the applicable requirements specified by the appropriate regulation.

H. Any planking, bracing, shoring, and barricades necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.

I. A sufficient supply of disposable mops, rags, and sponges for work area decontamination shall be available.

2.3 SAFETY SUPPLIES AND EQUIPMENT

A. All workers shall be provided with suitable personal protection equipment as specified in the Contractor's Health and Safety Plan. This equipment shall include disposal coveralls, head protection, foot coverings, gloves, and eye protection. Minimum respiratory protection shall be compliant with current OSHA regulations.

B. Air monitoring equipment of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.

2.4 TOOLS AND EQUIPMENT

A. The Contractor shall provide tools and equipment that are suitable for removal of caulk, including but Limited to:

1. Electrical equipment, protective devices and power cables shall conform to all applicable codes.

2. Low-pressure garden sprayers, in sufficient quantity and suitable for application of wetting agent/surfactant, shall be used.

3. Ladders, man-Lifts, scissor Lifts, and/or scaffolds of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.

4. All vacuum equipment used in the work area shall utilize HEPA filtration systems, 99.97% efficient at 0.3 microns aerodynamic particulate size. All vacuums shall be delivered to the work area with clean waste containers and intact, undamaged HEPA filters installed.

5. Conveyance equipment shall be suitable for on-site movement of the contaminated PCB Bulk Product Waste to on-site temporary storage areas proposed by the Contractor and approved by the Designer. The conveyance method shall minimize exposure to persons or property. The conveyance equipment shall be secured at all times and access restricted to unauthorized personnel.

PART3 - EXECUTION

3.1 EXAMINATION

A. The Contractor and Designer shall perform a visual survey of each work area and review conditions at the site for safety reasons.

B. Inventory and record the condition of caulk prior to be removal.

C. Perform surveys as the Work progresses to detect hazards resulting from caulk removal activities.

3.2 EMPLOYEE PROTECTION

A. The Contractor shall instruct all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

B. All employees of the Contractor who perform work removing caulk shall be properly trained to perform such duties.

C. Posting of regulations: Display the following documents in the clean changing area, in public view, for the full duration of the work:

1. Instructions for removing injured persons from work area.

2. Post emergency action plan at the work site. This plan shall also include telephone numbers for hospital, doctor and Fire Company.

3.3 ESTABLISHMENT OF REGULATED WORK AREAS

A. The Contractor shall establish a Regulated Area through the use of appropriate barrier tape, etc. and control unauthorized access into the area throughout the caulk removal activity in accordance with the following requirements.

B. Install 10-mil reinforced fire retardant polyethylene drop cloths on floors to collect debris from removal operation. The floor protection shall extend out 10 feet in all directions from caulk removal activities.

C. Caution signs shall be posted at all approaches to Regulated Areas so that an employee may read the sign and take the necessary protective steps before entering the area. These signs shall comply with 29 CFR1926.200(c) and read:

CAUTION
PCB WORK AREA
HUMAN AND ENVIRONMENTAL TOXIN
AUTHORIZED PERSONNEL ONLY
NO SMOKING OR EATING

D. Implement appropriate engineering controls such as critical barriers, poly drop cloths, negative pressure, local exhaust ventilation, wet dust suppression methods, etc. to prevent the spread of PCB contamination from the Regulated Area.

3.4 GENERAL REQUIREMENTS

A. The Contractor shall:

1. Shut down and lock out electrical power, including all receptacles and light fixtures, when feasible. The use or isolation of electrical power will be coordinated with all other ongoing uses of electrical power at the Site.

2. Coordinate all power and fire alarm isolation with the appropriate representatives.

3. When necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

B Ladders and/or scaffolds to be utilized throughout this project shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

C. Protection of Existing Construction: Perform caulk removal work without damage or contamination of adjacent areas and existing construction.

D. Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

E. The Contractor shall be responsible for verification of all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA and USEPA standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

F. Activity impacting caulk surfaces shall be performed in a manner which minimizes the spread of dust contamination and generation of airborne PCB.

G. The City of Waltham will provide an Environmental Consultant to monitor the activities of the Contractor. No activity impacting caulk shall be performed until the Environmental Consultant

is on-site. Environmental sampling, including ambient air sampling, shall be conducted by the Environmental Consultant throughout the project as deemed necessary.

H. Contractor is responsible for employee exposure monitoring, as required by OSHA regulations.

3.5 PCB-CONTAINING CAULK REMOVAL

A. Use procedures and equipment, as required, to limit occupational and environmental exposure to PCB's when PCB-containing caulk, associated backer rod and filler is removed in accordance with referenced standards.

B. The Contractor shall limit the production and dissemination of caulk debris as much as possible.

C. The Contractor shall remove the PCB caulk, associated backer rod, rubber gasketing, and filler using hand tools and whole or large pieces where possible.

D. The Contractor shall moisten the underlying material using the low-pressure garden sprayers and then hand scrape all residual PCB-containing caulking, associated backer rod and filler from underlying material. The Contractor shall perform manual wet scraping to the maximum extent feasible.

E. When the potential for dust generation exists, a HEPA filtered vacuum cleaner shall be used to provide local exhaust ventilation at the point of dust generation to prevent the release of visible fugitive emissions of dust.

F. The Contractor shall use a High Efficiency Particulate Air (HEPA) filtered vacuum dust collect ion system to remove any visible existing caulk fragments on the underlying materials, the protective sheeting or any other nearby surface that has visible deposits of dust or debris.

G. Mechanical grinding, cutting, sawing, sanding, or abrading the caulk or adjacent surfaces shall NOT be permitted.

3.6 CERTIFICATION OF REMOVAL

A. The Contractor shall schedule visual clearance inspection with the Environmental Consultant at the Site, when work area is ready for clearance testing.

B. The Environmental Consultant will perform a visual inspection of the work area. If the work area is satisfactory, the Environmental Consultant shall provide written approval of the work. If the work area continues to indicate the presence of caulk, the Contractor shall re-clean the area until acceptable to the Environmental Consultant.

C. The Consultant shall have final determination of an acceptable clearance level. Any sign of residual caulk is unacceptable and will require the affected area(s) to be re-cleaned using the procedures described above.

D. Remove polyethylene sheeting from openings after the Consultant has confirmed visual removal of PCB containing caulking. Include removed poly sheeting in disposal drum/container for disposal as PCB contaminated material.

3.7 WASTE MANAGEMENT

A. PCB-containing caulk shall be managed as a PCB Bulk Product Waste.

B. Backer rod, rubber gasketing, masonry, concrete, metal, and all other surfaces to which caulk is applied, and associated filler shall be managed as PCB Bulk Product Waste.

C. Sealed waste containers shall be moved to the temporary hazardous waste storage area.

D. All waste containers shall indicate the date of generation.

E. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

F. Access to the temporary storage area shall be controlled and limited to authorized personnel, and marked in accordance with 40 CFR 761.45.

3.8 RESTORATION

A. Remove temporary decontamination facilities and restore area designated for these facilities to its original condition or better.

B. Contaminated conditions shall be cleaned up immediately.

C. Damages to existing structures and/or features shall be restored to its original conditions or better at the discretion of the City of Waltham.

END OF SECTION

SECTION 310000

EARTHWORK

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within SECTION 01 - GENERAL REQUIREMENTS, which are hereby, made a part of this Section of the Specifications.

1.2 SCOPE OF WORK

A. Work covered by this specification includes:

1. All labor and equipment required to excavate and grade the site due to building demolition
2. Backfilling
3. Erosion and sedimentation controls.

1.3 CONTRACT REFERENCE

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.4 DESCRIPTION

A. The Contractor shall furnish all labor, material, tools and equipment necessary to excavate and perform demolition activities in accordance with SECTION 024000-1 – BUILDING AND ANCILLARY STRUCTURES DEMOLITION and re-grade as indicated on the Drawings.

B. The Contractor shall use suitable on-site soils as fill.

C. The Contractor shall make excavations in such a manner and to such widths that will give suitable room for performing the Work and shall furnish and place all sheeting, bracing, and supports, if necessary.

D. The Contractor shall do all pumping and draining, if necessary; and shall render the bottom of excavation firm and dry. The Contractor shall collect and properly dispose of all discharge water from drainage systems in accordance with local and State requirements and permits.

E. The Contractor shall raise the Site to final grades and compact the subgrade and intermediate layers to the required criteria set forth within the Section.

F. Routine monitoring of the in-place excavation support system shall be provided.

G. Pavement Repairs

1.5 SECTION INCLUDES

A. Excavating and backfilling for utility trenches and utilities to be abandoned.

B. Excavating and shoring or bracing as necessary.

C. Site grading.

D. Required Engineering testing frequency and references.

1.6 RELATED SECTIONS

A. Section – 31000 - SITE CLEARING

1.7 DEFINITIONS

A. Compaction: The tamping and rolling of all backfill placed in uniform horizontal layers not exceeding a defined uncompacted lift thickness.

B. "In-the-dry": In-situ soil moisture content of no more than two percentage points above the optimum moisture content for that soil.

C. Proof-rolling: The tamping and rolling of all subgrades and processed material not exceeding a defined uncompacted lift thickness.

D. Unsuitable material: Material containing vegetation or organic material, such as mulch, peat, organic silt, topsoil, sod, deleterious material, and/or particles greater than four inches in diameter, that are not satisfactory for use as determined by the City of Waltham.

E. Backfill: Soil material used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

F. Base Course: Course placed between the grade and hot-mix asphalt paving.

G. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

H. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

I. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated. Excavation is unclassified.
   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Consultant. Authorized additional excavation and replacement material will be paid for according to Contract provisions.

2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by City of Waltham. Unauthorized excavation, as well as remedial work directed by City of Waltham, shall be without additional compensation.

J. Fill: Satisfactory Soil used to raise existing grades or meet proposed grades.

K. Optimum Moisture Content: Determined by the ASTM standard specified to determine the maximum dry density for relative compaction.

L. Prepared Ground Surface: The ground surface after clearing, grubbing, stripping, excavation, and scarification and/or compaction.

M. Relative Density: As defined by ASTM D4253 or D4254.

N. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D1557. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.

O. State Standards: Massachusetts Highway Department Standard Specifications for Highways and Bridges.

P. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

Q. Sub-base Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

R. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below sub-base, drainage fill, or topsoil materials.

S. Unclassified Excavation: The nature of materials to be encountered has not been identified or described herein.

T. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.8 PROTECTION OF WORKERS

A. This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926. Contractors shall be familiar with the requirements of these regulations.

B. The Contractor is responsible for the adequacy of any excavation support systems and shall retain the services of a Professional Engineer registered in Massachusetts to design the required excavation support systems. The Contractor’s Professional Engineer shall practice in a

discipline applicable to excavation work, shall have experience in the design of excavation support systems and shall design in conformance with OSHA requirements. The Contractor's Professional Engineer shall provide sufficient on-site inspection and supervision to assure that any excavation support systems are installed and function in accordance with their design. Criteria listed herein defining the responsibilities of the Contractor's Professional Engineer are minimum requirements.

1.9 REFERENCES

A. American Society of Testing and Materials Publications

1.10 SUBMITTALS

A. Product data for geotextiles.

B. Grain-size distribution analysis test data representative of existing on-site soils to be used as fill. The analysis shall be performed in accordance with ASTM D422 and all materials that are visibly classified to be different shall be tested.

C. The Contractor shall submit to the City of Waltham, under provisions of Section 013300, manufacturer's literature and data on proposed compaction equipment.

D. The Contractor shall provide the City of Waltham on a daily basis, the results of all compaction monitoring performed that day. The Contractor shall address the actions taken for areas and layers that did not achieve the required density criteria.

E. The Contractor shall provide to the City of Waltham, on a daily basis, copies of field records documenting the location of stockpiled material, and stockpile identification data.

F. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each onsite and borrow soil material proposed for fill and backfill.

2. Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.

G. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.11 REGULATORY REQUIREMENTS

A. The Contractor shall comply with all excavation, trenching, and related sheeting and bracing requirements of Occupational Safety and Health Administration (OSHA) excavation safety standards, 29 CFR Part 1926.650 through 1926.652.

B. The Work of this Section shall be performed in accordance with all applicable Federal, State, and local regulations, laws, codes, and ordinances governing the handling, transportation and disposal of on site soils. Any contaminated materials encountered during construction may constitute a regulated material under applicable Massachusetts law. The contractor shall notify the City of Waltham and comply with the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000 for any contaminated materials encountered during excavation work. All testing, containment, and disposal of buried contaminated soils based on the MCP will be paid at an additional cost. All handling, transportation and disposal of such materials shall be accomplished in accordance with applicable Massachusetts Solid and Hazardous Waste Regulations and the Massachusetts Contingency Plan. .

1.12 QUALITY ASSURANCE

A. Field inspection and testing will be performed by a geotechnical testing laboratory engaged by the Contractor.

B. The Contractor shall be responsible for managing and tracking any and all materials excavated that appear contaminated and placed in stockpiles and protected for testing.

C. The Contractor shall perform proof-rolling of all subgrades and processed material until the material is stable.

D. The Contractor shall perform in-place density tests of on-site and off-site borrow materials as the Work progresses, to determine the degree of compaction being attained by the Contractor. Compaction tests shall be performed at the placement of each layer during embankment construction and at intervals of every 50 cubic yards of material compacted elsewhere. Any corrective work required as a result of such tests, such as additional compaction, or a decrease in the thickness of layers, shall be performed by the Contractor at no additional expense to the City of Waltham. In-place density testing shall be made at the Contractor's expense by the geotechnical laboratory.

E. Do not commence earth moving operations until temporary erosion and sedimentation control measures are in place.

F. The Designer's duties do not include the supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of an engineer nor any observation and testing by the Engineer shall excuse the contractor from defects discovered in his Work at that time or subsequent to the testing.

G. Notify Utility Locator Service: Call Dig-Safe prior to beginning any Earth moving operations.

H. Subgrades shall be approved for compactness and material composition by the City of Waltham prior to placing subsequent lifts. If inspections indicate Work does not meet specified requirements, the Work shall be removed, replaced and compacted at no additional cost to the City of Waltham.

I. Geotechnical Testing Agency Qualifications: The contractor shall engage an independent testing agency qualified according to ASTM E 329 to conduct soil materials as documented according to ASTM D 3740 and ASTM E 548.

J. Pre-excavation Conference: Conduct conference at Project site.

1.14 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the User Agency or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.
   1. Notify City of Waltham not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without City of Waltham's written permission.
   3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

C. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by the City of Waltham or Authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; MassDot M2.01.4

E. ¾” Washed Stone: Double washed, naturally or artificially graded mixture of natural or crushed gravel, or crushed stone meeting the requirements of MHD M2.01.4.

F. 1-1/2” Washed Stone: Double washed, naturally or artificially graded mixture of natural or crushed gravel, or crushed stone meeting the requirements of MHD M2.01.2.

G. Embankment Fill: Clean, low permeability soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material.

2.2 GEOTEXTILE

A. Non-woven Filter Fabric: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 157 lbf ; ASTM D 4632.
3. Sewn Seam Strength: 142 lbf ; ASTM D 4632.
4. Tear Strength: 56 lbf ; ASTM D 4533.
5. Puncture Strength: 56 lbf ; ASTM D 4833.
6. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
7. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

B. Woven geotextile fabric, manufactured for separation applications from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test method referenced:

1. Survivability: Class 2; AASHTO M 288
2. Grab Tensile Strength: 247 lbf ; ASTM D 4632
3. Sewn Seam Strength: 222 lbf; ASTM D 4632
4. Tear Strength: 90 lbf; ASTM D 4533
5. Puncture Strength: 90 lbf; ASTM 4833
6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D4751
7. Permittivity: 0.02 Per second, minimium; ASTM D 4491
8. UV Stability: 50 Percent after 500 hours exposure; ASTM D 4355.

2.3 CRUSHED STONE

A. Provide aggregate meeting MassDOT (formerly MassHighway Department) standard specifications for highways and bridges type M2.01.2 and M2.01.4 as indicated on the drawings.

2.4 PAVEMENT

A. Provide bituminous asphalt meeting MassDOT (formerly MassHighway Department) standard specifications for highways and bridges Table A in M3.11 for modified top course.

PART 3 - EXECUTION

3.1 GENERAL

A. Prior to commencing work, the Contractor shall establish property line locations and place construction control markers clearly visible and understandable to workers in the field. The Contractor shall exercise due care so as not to disturb adjacent structures and shall leave the Site in clean and orderly condition upon completion of the work.

3.2 PREPARATION

A. The Contractor shall be deemed to have inspected the Site and satisfied himself/herself as to actual grades and levels and true conditions under which the Work will be performed.

B. Areas required for execution of Work shall be cleared. The work area shall be free of standing water and shall be dry.

C. All site health and safety controls shall be fully established and in operation prior to beginning any demolition, soil, and fill excavation. Site controls shall include but not be limited to work zones properly barricaded, wheel wash and decontamination facilities, and all support equipment and supplies including personal protective equipment. All site controls shall be reviewed by the Engineer in the field.

D. The Contractor shall provide all layout field data, including ties, to the City of Waltham. The Contractor shall maintain all required field controls throughout the performance of the Work.

E. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

F. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Section 311000 Site Clearing."

G. Protect and maintain erosion and sedimentation controls, which are specified in on the drawings, during earthwork operations.

H. Clear, grub, and strip any vegetation; scarify and excavate materials below embankment.

3.6 EXCAVATION, GENERAL

A. The Contractor shall remain responsible for adequacy and safety of construction means, methods and techniques.

B. The Contractor shall perform all excavation work in accordance with the Site Health and Safety Plan.

C. The Contractor shall complete all excavations regardless of the type, nature or condition of the material encountered. The Contractor shall be solely responsible for making all excavations in a safe manner.

D. The City of Waltham shall be notified of unexpected subsurface conditions. Work shall be discontinued in affected areas until notified to resume work by the City of Waltham.

E. Displaced or loose soil shall be prevented from falling into any excavation. The stability of soil slopes shall be maintained.

F. All loose material shall be removed from the bottom of the excavation so that the bottom shall be in an undisturbed condition. If removal of the loose material results in excavation beyond the work limits and over excavation has not been approved by the City of Waltham; the restoration of the excavation to grade shall be done at no additional cost to City of Waltham.

G. When the bottom of the excavation shall, by error of the Contractor, have been taken to a depth greater than the depth specified, or direct by the City of Waltham, said condition shall be corrected by refilling to the proper grade with crushed stone or the design shall be altered in a fashion acceptable to the City of Waltham to compensate for said error. All measures taken to rectify conditions caused by over excavation shall have the Engineer's approval, and any increase in cost resulting from such measures shall be borne by the Contractor.

H. Excavation shall not be performed when weather conditions or the conditions of the materials are such that, in the opinion of the Engineer, work cannot be performed satisfactorily.

I. Appropriate measures shall be provided to retain excavation sidewalls and to ensure that persons working in or near the excavation are protected. Barricades and fencing should be provided to protect all pedestrians. Sheeting shoring or bracing may be used to support the walls of excavations. Method, design, construction and adequacy of any required bracing shall meet the OSHA requirements of 29 CFR Part 1926 and are the responsibility of the Contractor.

J. All damage related to or caused by the excavation shall be repaired at the expense of the Contractor.

K. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. .

3.7 SUBGRADE INSPECTION AND COMPACTION AT PAVEMENT PATCHES

A. Notify Engineer when excavations have reached required subgrade.

B. Compact subgrade below all pavement patches. Do not compact saturated subgrades.

3.8 HANDLING OF EXCAVATED MATERIAL

A. The Contractor shall excavate soil and fill to the limits necessary to achieve the required grades and balance the excavation and fill volumes as requested by the City of Waltham. No fill materials are intended to be brought onto the site or removed and disposed unless specifically indicated as needed for work such as the embankment, spillway etc. or deemed as unsuitable fill.

B. Contractor shall employ methods necessary to isolate potentially contaminated soil, from non-contaminated soils, including benching.

C. The Contractor shall separate excavated fill and soil based on the determination that the contaminated soil could be composed of variable material (e.g. physical differences and contain varying degrees of contamination (i.e., potentially contaminated, visually contaminated) or as directed by the City of Waltham.

3.9 STORAGE OF SOIL MATERIALS - STOCKPILING

A. Materials shall be stockpiled on site at locations proposed by the Contractor and approved by the City of Waltham. Stockpiled materials shall be of sufficient quantities to meet project schedule and requirements

B. Tracking of the stockpiles shall be performed in accordance with the approved Work Plan submitted by the Contractor in accordance with Section 013300.

C. The temporary stockpiled fill and proven contaminated soil must be removed from the Site in accordance with applicable regulatory deadlines however no later than the completion date of this contract or 90 days from the date the stockpile was created, whichever is encountered first.

D. Stockpiles shall be securely barricaded and clearly labeled. Differing materials shall be separated with dividers or stockpiled apart to prevent mixing.

E. The Contractor shall direct surface water away from stockpile site to prevent erosion or deterioration of materials. Soils shall be suitably dewatered prior to their relocation on Site or disposal off site.

F. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL AND TEMPORARY EMBANKMENT CONSTRUCTION

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Removing trash and debris.
2. Removing temporary shoring and bracing, and sheeting (if required).

B. If, through failure or neglect of the Contractor to conduct the excavation work in a proper manner, the surface of the subgrade is in an unsuitable condition for proceeding with construction, the Contractor shall, at his own expense, remove the unsuitable material and replace it. Failure of the Contractor to control surface or ground water adequately, premature excavation at the work site, or other manifestations of the Contractor’s neglect or improper conduct of the work, as determined by the Engineer, shall be grounds for requiring removal and replacement of unsuitable subgrade without additional compensation.

C. Grading in the vicinity of backfilling shall be properly pitched to prevent water from running into the backfilling. Work areas shall be keep free from water during performance of the work under this Contract at no expense to the City of Waltham. The Contractor shall build diversion berms and other devices necessary for this purpose.

D. The Contractor shall not commence backfilling operations until the City of Waltham gives approval.

E. After the subgrade has been prepared, fill material shall be placed and built-up in successive layers until the required elevations are reached. No fill shall be placed on a frozen surface, nor shall snow, ice, or other frozen material be included in fill. Wet materials containing moisture in excess of the amount necessary for satisfactory placement or compaction shall not be used.

F. All fill shall be brought up in essentially level lifts and shall be placed in levels by standard methods. The method of placement shall not disturb or damage other work. Layers of fill shall not exceed ten inches of uncompacted thickness before compaction, unless otherwise specified or as required for proper subgrade stabilization.

G. Place backfill on subgrades free of mud, frost, snow, or ice.

H. Filling operations shall continue until the fill has been brought up to the finished slopes, lines, and grades making proper allowances for thickness of surface treatment.

I. The entire surface of the work shall be maintained free from ruts and in a condition that will permit construction equipment to travel readily over any section. The top surface of each layer shall be made level or slightly sloped away from the center of the filled area. Fills should be graded to drain and compacted/sealed whenever precipitation is expected.

J. Backfilling shall not be performed when weather conditions or the conditions of the material are such that, in the opinion of the Engineer, work cannot be performed satisfactorily.

K. Place and compact embankment fill in 6” lifts to 95% maximum dry density. Stabilize with vegetation and erosion control mat immediately following construction.

L. Stockpile and dispose of unsatisfactory fill. Contractor is to carry a quantity allowance of 20 cubic yards for stockpiling and disposing of unsatisfactory fill.

3.11 UTILITY TRENCH BACKFILL AT UTILITIES TO BE ABANDONED

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact backfill material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
   1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of exposed utility piping or conduit to be abandoned.

C. Backfill voids with satisfactory soil while installing and removing shoring and bracing.

D. Place and compact backfill of satisfactory soil to final subgrade elevation.

3.12 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
   1. Sequentially place and compact fill material in layers to required elevations

B. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by +2 to -3 percent and is too wet to compact to specified dry unit weight.
   3. If in the opinion of the City of Waltham, additional moisture is required, water shall be applied by sprinkler tanks or other uniform distribution devises. If excessive amounts of water or if rain should cause excessive wetness, the area shall be allowed to dry as provided above.

3.14 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Grading shall be done by standard methods. Areas adjacent to structures and other areas inaccessible to heavy grading equipment shall be graded by manual methods. Embankments shall be graded at all times to ensure runoff of water.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
   3. Provide proper drainage from the site, no grading shall be done to direct water to damage or potentially damage adjacent property or work executed under this contract.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

   1. Lawn or Unpaved Areas: Plus or minus 1 inch

3.14 COMPACTION REQUIREMENTS

B. The following table lists minimum compactive efforts, which are required for all, fill materials. Compaction of each lift shall be completed before placement and compaction of the next lift is started. The compaction equipment shall make an equal numbers of transverse and longitudinal coverages of each lift. The degree of compaction for fill placed in various areas shall be as follows:

1.	At patches in paved areas	
	Within aggregate base course	95%
2.	In landscaped areas	90%
3.	Embankment	95%

*Percentage of maximum dry density of the materials at optimum moisture content as determined by methods or tests for ASTM designation D1551 Method D.

C. Compaction shall be accomplished by vibratory rollers, multiple wheel pneumatic tired rollers or other types of approved compacting equipment. Loaded trucks, low beds, water wagons and the like shall not be considered as acceptable compaction equipment unless specifically approved by the Engineer for a particular location. Equipment shall be of any such design that it will be able to compact the fill to the specified density in a reasonable length of time. All compaction equipment shall be subject to the approval of the Engineer.

D. The Contractor shall compact all fills made during the day of work prior to leaving the project for the evening. The upper layer shall be pitched as necessary to provide positive drainage towards swales or interceptor ditches to minimize ponding and erosion should it rain.

3.15 COMPACTION TESTING & SIEVE ANALYSIS

A. Testing Agency: The Contractor will engage a qualified independent Engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

D. All sieve analyses for conformance of on-site materials to be used in the work shall be done by means of a mechanical wet sieve analysis and in accordance with ASTM D-422.

E. The Contractor shall make all necessary excavations and preparations for testing. Excavations for density tests shall be backfilled with material similar to that excavated, and compacted to the specified density by the Contractor. Failure of the backfill material to achieve the specified density will be just cause for rejection of any or all portions of the excavation section tested. The Contractor will not be granted an extension of time or additional compensation for testing or repair of backfill ordered by the City of Waltham.

F. Excavated material taken directly from on-site cuts that will meet Section 2.1 of these Specifications may be used as Common Borrow or Gravel Borrow provided the Contractor obtains written approval from the Engineer. No such fill material shall be put in place until approved for use by the Engineer in writing.

G. Field density tests will be made by the Contractor's Inspection Agency in accordance with the Method of Test for ASTM Designation D1556 or D6938, to determine adequacy of compaction; the location and frequency of such field tests shall be at the City of Waltham's Inspection Agency's discretion.

H. The Contractor shall notify the Inspection Agency when an area is ready for compaction testing. This notification shall be 48 hours in advance of placing or final compaction so that the contractor's Inspection Agency has adequate time to take compaction tests.

I. Cooperate with the City of Waltham in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests. The Contractor will be informed by the City of Waltham of areas of unsatisfactory density which may require

improvements by removal and replacement, or by scarifying, aerating, sprinkling (as needed), and recompaction prior to the placement of the new lift. No additional compensation shall be paid for work required to achieve proper compaction.

J. The City of Waltham's Inspection Agency's presence does not include supervision or direction of the actual work by the Contractor, his employees, or agents. Neither the presence of the Engineer nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, and erosion. Keep free of trash and debris.

1. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off City of Waltham's property

END OF SECTION

SECTION 311000

SITE CLEARING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Protecting existing trees and vegetation to remain both inside and outside limits of construction, including temporary fencing for trees in close proximity to construction operations.
2. Removing above and below grade site improvements storing those designated for re-use as required and disposing of those not specifically noted for re-use.
3. Disconnecting, capping, and sealing of the pipe tunnels.

B. Alternates: Not Applicable.

C. Items To Be Installed Only: Not Applicable.

D. Items To Be Furnished Only: Not Applicable.

E. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 310000 – EARTHWORK for soil materials, excavating, backfilling, and site grading and removal of site utilities.

1.3 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain the City of Waltham's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

A. Photographs sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

B. Record drawings, according to Section 017700 - CONTRACT CLOSEOUT identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the City of Waltham and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on User Agency's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site clearing operations until erosion and sedimentation control measures are in place.

E. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing improvements indicated to remain in place or outside of the limit of work. Protect improvements on adjoining properties and on User Agency's property.

1. Restore improvements damaged by Contractor's clearing activities to their original condition, at no additional expense to the Commonwealth.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to the City of Waltham.

3.2 PROTECTION

A. Protect all trees noted to remain within limits of construction, and all trees that are outside the limits of construction and within 25'.

B. Erect and maintain temporary fencing around the Site buildings before starting site clearing and demolition operations. Remove fence when demolition and site work is complete.

1. Store all construction materials, debris, and excavated material within fenced area.
2. Do not permit vehicles, equipment, or foot traffic within fenced area.
3. Maintain fenced area free of weeds and trash.
4. Except as otherwise directed, cutting and trimming of existing trees will not be permitted.

3.3 UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.

1. Arrange with the electrical utility to shut off temporary electric service prior to disconnection, cutting, and capping.

2. Notify the City of Waltham of any active utilities in addition to the temporary electric service.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by the City of Waltham or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify the City of Waltham not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without the City of Waltham's written permission.

C. Removal of underground utilities is included in Section 310000 – EARTHWORK.

D. Removal of underground utilities is included in Division 2 Sections covering site utilities.

3.4 TOPSOIL STRIPPING

A. Remove and dispose of sod and grass before stripping topsoil.

B. Strip topsoil to the extent necessary to remove the building foundations to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

3.5 EXCESS TOPSOIL

A. Dispose of all excess topsoil offsite.

3.6 SITE IMPROVEMENTS

A. Remove and dispose of existing above- and below-grade improvements as indicated and as necessary.

B. Remove and dispose of slabs, paving, curbs, gutters, and aggregate base as indicated.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off site.

1. Burning on site is prohibited.
2. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION

Abatement & Demolition Services,
Young Building
509 Moody Street, Waltham

BID PRICE SHEET

Obtain Permits, approvals from utility companies, pre-bait site, secure site; perform environmental abatement, filings, Demolition, Proper Disposal of all construction debris and pavement, Clean Site, obtain final inspections, etc.

Total, all-inclusive and not-to-exceed Project Cost **$_____**

Price written in Words: _____

_____

Prepared for the City of Waltham By:

Authorized Signature: _____, Date: _____

Print Name: _____

Name of the Company: _____

Address: _____

Email: _____

Phone Number: _____

AGREEMENT

CITY OF WALTHAM

ARTICLE 1. This agreement, made this_____ day of_____, 2018 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

_____

_____

Hereinafter called the CONTRACTOR.

ARTICLE 2. Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, Bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, Bid, Project Manual, documents submitted in response to the bid and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

ARTICLE 3. In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required but not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or form the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole hereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

CITY OF WALTHAM, MASSACHUSETTS

FOR THE CITY

_____

Jeannette A. McCarthy, MAYOR, City of Waltham

Date:

_____

John B. Cervone, City Solicitor Date

APPROVED AS TO FORM ONLY

_____

William Forte, Buildings Superintendent
Date: _____

_____

Joseph Pedulla, Purchasing Agent

Date: _____

_____

Paul Centofanti, Auditor

Date: __ __ __ __ __ __

1 CERTIFY THAT SUFFICIENT FUNDS ARE AVAILABLE FOR THIS CONTRACT

FOR THE COMPANY

_____

CONTRACTOR (Signature),

_____

Company Address

_____

Date: _____

ORIGINAL, "WET" SIGNATURE IS REQUIRED

COMPLIANCE FORMS

(PLEASE COMPLETE AND SUBMIT THESE FORMS WITH YOUR RESPONSE)

ORIGINAL, “WET” SIGNATURE IS REQUIRED IN THE FOLLOWING DOCUMENTS

ORIGINAL, "WET" SIGNATURE IS REQUIRED

NON-COLLUSION FORM AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

_____,_____
(Signature of person signing bid or proposal)Date

_____
(Name of business)

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, & 49A,I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____,_____
Signature of person submitting bid or proposal Date

_____
Name of business

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

ORIGINAL, "WET" SIGNATURE IS REQUIRED

ORIGINAL, "WET" SIGNATURE IS REQUIRED

CERTIFICATE OF VOTE AUTHORIZATION

Date:

I_____, Clerk of_____hereby certify that at a meeting of the Board of Directors of said Corporation duly held on the_____day of _____at which time a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

VOTED: That_____(*name*) is hereby, authorized, directed and empowered for the name and on behalf of this Corporation to sign, seal with the corporate seat, execute, acknowledge and deliver all contracts and other obligations of this Corporation; the execution of any such contract to be valid and binding upon this Corporation for all purposes, and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk of this Corporation.

I further certify that_____is duly elected/appointed _____ _____ of said Corporation whose signature appears below as an officer

_____
Signature of Officer

SIGNED:

_____ (Corporate Seal)
Clerk of the Corporation:

Print Name: _____

COMMONWEALTH OF MASSACHUSETTS

County of _____ Date:

Then personally appeared the above named and acknowledged the foregoing instrument to be his/her free act and deed before me, and provided to me through satisfactory evidence of identification which were_____to be the person whose name is signed on the preceding or attached document in my presence.

Notary Public;

My Commission expires: _____

CORPORATION IDENTIFICATION

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state _____
President_____
Treasurer_____
Secretary_____
Federal ID Number_____

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?
Yes_____, No _____
If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)
Name of partner _____
Residence_____
Name of partner _____
Residence _____

If an Individual:
Name_____
Residence _____

If an Individual doing business under a firm's name:
Name of Firm _____
Name of Individual _____
Business Address _____
Residence_____
Date _____
Name of Bidder _____
By _____

Signature _____

Title_____

_____
Business Address (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

_____
City State Telephone Number Today's Date

ORIGINAL, "WET" SIGNATURE IS REQUIRED

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM

Company's Name:	Address:	Phone No.:	Payroll No.:

Employer's Signature:	Title:	Contract No:	Tax Payer ID Number	Work Week Ending:

Awarding Authority's Name:	Public Works Project Name:	Public Works Project Location:	Min. Wage Rate Sheet Number

General / Prime Contractor's Name:	Subcontractor's Name:		"Employer" Hourly Fringe Benefit Contributions														
														(B+C+D+E)	(A x F)		
Employee Name & Complete Address	Work Classification:	Employee is OSHA 10 certified (?)	Appr. Rate (%)	Hours Worked Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.	Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	Project Gross Wages / Total Gross Wages	Check No. (H)

Are all apprentice employees identified above currently registered with the MA DLS's Division of Apprentice Standards? YES ☐ NO ☐

For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards. No apprentices are identified above ☐

NOTE: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a **true and accurate** copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Date Received by Awarding Authority
/ /

WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at www.mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or e-mail, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

STATEMENT OF COMPLIANCE

_____, 20_____

I,_____,_____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature_____

Title _____

05/14

DEBARMENT CERTIFICATION

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. “Principals” means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Purchasing Agent of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the City of Waltham, the contract will be cancelled and the award revoked.

Company Name: _____

Address: _____

City_____, State: _____, Zip Code: _____

Phone Number ( ) _____

E-Mail Address: _____

Authorized Signature: _____

Print name: _____

Date: _____

ORIGINAL, “WET” SIGNATURE IS REQUIRED

10 HOURS OSHA TRAINING CONFIRMATION

Chapter 306 of the Acts of 2004 CONSTRUCTION PROJECTS

AN ACT RELATIVE TO THE HEALTH AND SAFETY ON PUBLIC

The undersigned hereby certifies that all employees to be employed at a worksite for construction, reconstruction, alteration, remodeling, repair, installation, demolition, maintenance or repair of any public work or any public building estimated to cost more than $10,000.00 have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first payroll report for each employee and will comply with all laws and regulations applicable to awards of subcontracts subject to section 44F.

Company Name: _____

Address: _____

Signature: _____

Title: _____

Print Name _____

Date _____

See following Chapter 306 of the Acts of 2004

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

ORIGINAL, "WET" SIGNATURE IS REQUIRED

APPENDIX A

efi global

BOSTON NORTH

September 4, 2018

Mr. Joseph Pedulla, MCPPO, CPM
Chief Procurement Officer
510 Moody Street
Waltham, MA 02453

RE: **Asbestos & Hazardous Materials Survey Report**
Commercial/Residential Building
509 Moody Street
Waltham, Massachusetts
EFI Project No. 020.00049

Dear Mr. Pedulla:

EFI Global Inc. (EFI) is pleased to provide this survey report to the City of Waltham for a pre-demolition hazardous materials survey of the interior and exterior of the commercial/residential building located at 509 Moody Street in Waltham, Massachusetts (Site). EFI performed the survey on August 20, 2018 using fully trained and licensed building inspectors. The pre-demolition survey included an inspection of the building for suspect asbestos-containing materials, sampling of representative coatings for lead-based paint, and an inventory of universal waste and other hazardous materials.

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 this opportunity to serve your environmental needs.

Sincerely,
EFI Global, Inc.

Richard Murphy
Assistant Project Manager

John Vaz
Project Manager

ASBESTOS & HAZARDOUS MATERIALS SURVEY REPORT

509 MOODY STREET
WALTHAM, MASSACHUSETTS 02453

Prepared for:

Mr. Joseph Pedulla, MCPPO, CPM
City of Waltham
610 Main Street
Waltham, Massachusetts 02453

Prepared by:

155 West Street, Suite 6
Wilmington, Massachusetts 01887

EFI Project Number 020.00049
September 4, 2018

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1.0 EXECUTIVE SUMMARY

This report presents the results of the pre-demolition survey for asbestos-containing materials (ACM), lead-based paint (LBP), Universal Waste (e.g., PCB- and mercury-containing electrical equipment) and other hazardous materials (OHM) at 509 Moody Street located in Waltham, Massachusetts (Site).

EFI's asbestos and hazardous materials survey of the Site building was conducted on August 20, 2018. The scope of work for EFI's limited survey was to perform a walkthrough of the building to identify the types, locations, and quantities of ACMs and perform laboratory testing of suspect ACMs. In addition, EFI performed a lead paint screening of representative painted/coated building components, and inventoried Universal Waste and OHMs present on the interior and exterior of the building. The purpose of EFI's limited survey was to identify and quantify ACMs, and OHMs that may need to be removed prior to building demolition activities and to identify lead containing paint that may present on the interior and exterior of the site building.

The building located at 509 Moody Street is a two-story commercial/residential building with a basement, totaling approximately 12,000 square feet in area. The building is constructed of concrete and CMU walls over a steel frame. Interior finishes consist of gypsum board walls, plaster, vinyl floor tile, sheet flooring, carpeted flooring, and acoustical ceiling tiles.

Asbestos

Section 2.0 outlines the procedures and results of the asbestos survey. The survey involved locating, quantifying, and evaluating the condition of accessible suspect ACMs using bulk sampling and visual inspection techniques.

The asbestos inspection was performed by Massachusetts-licensed asbestos inspectors Mr. John Vaz (License No. AI000270) and Mr. Richard Murphy (License No. AI900522). A total of 191 samples of suspect asbestos-containing materials (ACM) were analyzed for asbestos content during the survey. EFI's inspectors performed the visual inspection and bulk sampling of suspect ACMs on Site and submitted them under chain of custody protocol to EMSL Analytical, Inc. (EMSL) of Woburn, Massachusetts, a Massachusetts-licensed laboratory. Samples were analyzed with a standard 5-day turnaround time using polarized light microscopy (PLM) in accordance with United States Environmental Protection Agency (USEPA) Method 600/R-93/116. The findings of this report are based upon observations of accessible materials and the analysis of representative bulk samples collected.

An inventory of the types, quantities, and location of ACMs identified during the survey is presented in Table 1. Copies of the asbestos laboratory analytical reports are presented in Attachment B.

The following suspect ACMs sampled by EFI were reported by EMSL as containing greater than or equal to one percent asbestos, the Massachusetts limit for classification as ACM:

- Brown Roof Skylight Caulking
- Interior White Window Glazing
- Black Paper Under Tile on Subfloor
- Gray Pebble Sheet Flooring Bottom Layer
- Floor Leveler Under Carpet
- 9" x 9" Gray Floor Tile
- Yellow Patter Linoleum Under Plywood
- Joint Compound

Based on the laboratory results and EFI's visual observations, it is recommended that asbestos-containing materials identified at the Site building be properly removed and disposed by a Massachusetts-licensed asbestos abatement contractor prior to the start of demolition activities that may impact the materials.

If suspect ACMs other than the above-referenced materials are identified during demolition activities, EFI recommends that they be sampled by a Massachusetts-licensed asbestos inspector and analyzed by a Massachusetts-licensed asbestos analytical laboratory. EFI is available to assist with abatement contractor oversight and air monitoring as required by applicable state and federal asbestos regulations.

Lead-Based Paint

Section 3.0, outlines the procedures and results of the lead paint survey. During the survey, EFI performed limited testing for lead-based paint in accessible areas of the building, which involved the collection of paint chip samples from representative painted painted/coated surfaces. Lead analysis was conducted with a standard 5-day turnaround time by EMSL using atomic absorption spectrometry (AAS) in accordance with USEPA method SW846-7420.

EMSL reported that the dark green paint on the concrete floor contained a lead concentration of 2.2% by weight. These results are greater than the US EPA regulatory limit of 0.5% by weight for classification as a "lead based paint." The gray paint on concrete floor, red paint on concrete floor, yellow paint on concrete floor, light green paint on block wall, purple paint on sheetrock walls, white paint on brick walls, white paint on sheetrock walls, lime green paint on sheetrock walls, cream paint on sheetrock walls, green paint on wood walls, cream paint on exterior wood door/frame, tan paint on exterior brick wall, blue paint on sheetrock wall, and pink paint on sheetrock walls and frames were reported by EMSL as containing a lead concentration of below the laboratory detection limit of 0.010 % by weight.

It is recommended that construction or demolition personnel conducting demolition work at the Site building comply with applicable OSHA Lead Construction Standard requirements during all construction activities at the Site. The analytical results of the testing performed by EFI, including location, building component, and percent lead for each interior/exterior building component tested are presented in Attachment C.

Universal Waste

Section 4.0 outlines the procedures and results of the Universal Waste survey. EFI conducted a visual inspection for the presence of PCB and/or mercury-containing fluorescent light fixture components within the interior and exterior of the building. EFI identified suspected PCB and di (2-ethylhexyl) phthalate (DEHP)-containing light ballasts, and mercury-containing fluorescent light bulbs throughout the building. It is recommended that identified Universal Waste at the Site building be properly removed, packaged, transported, and disposed by a qualified contractor.

Other Hazardous Materials

Section 5.0 outlines the procedures and results of the OHM survey/inventory. Other hazardous materials observed within the Site building included thermostats/switches, emergency exit signs/lights/strobes (lead acid batteries), door arms, smoke alarms, refrigerators, microwaves and air conditioning units. It is recommended that the identified Hazardous Materials at the Site building be properly removed,

packaged, transported, and disposed by a qualified contractor. An inventory of OHMs identified during EFI's survey is presented in Table 2.

Limitations

This report is intended for the sole use of the City of Waltham and is not to be used as a bidding document. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations, is at risk of said user. This investigation was performed to identify readily accessible and visible hazardous materials, however, it should not be assumed that all hazardous materials in the building have been identified due to issues relating to accessibility of rooms, inaccessible building areas and wall/ceiling cavities.

Destructive Testing: When specifically requested as *'destructive testing'*, and in accordance with industry standards, EFI uses destructive investigation techniques to identify if suspect asbestos-containing materials exist within areas not immediately observable from interior building spaces, (termed 'hidden' or 'inaccessible' areas). EFI's destructive investigations are conducted with hand tools on *representative* interior wall and ceiling systems and pipe chases that appear to be homogenous in the judgment of the inspector and are not intended to impact the structural integrity or safety of the building. Therefore, not all hidden or inaccessible areas may be accessed during destructive testing. This process is a part of the investigation effort to establish homogenous building areas based upon observable, quantifiable construction materials used.

EFI does not perform destructive testing with the use of power tools and heavy equipment. This limitation extends to areas within the building envelope, exterior building cavity, below and behind concrete and masonry floors, walls and ceilings/roofs, unless specifically requested in writing by Client. For buildings or areas that are planned to undergo whole-scale demolition, EFI requires the Client or others to render these areas accessible to EFI or Client shall establish an allowance or contingency representing the potential presence of asbestos containing materials within these inaccessible areas.

Below Grade Exclusions: EFI's survey methods do not included an evaluation of underground asbestos cement water or sewage piping, underground steam lines, or subsurface foundation damp-proofing that may be present at Site unless specific access to the materials are provided to EFI.

EFI's professional services have been performed, our findings obtained and our recommendations prepared in accordance with customary principles and practices in the field of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

2.0 ASBESTOS CONTAINING MATERIALS SURVEY

2.1 SAMPLING METHODOLOGY

The survey was performed by USEPA-accredited and Massachusetts-licensed asbestos inspectors. EFI conducted a thorough inspection of accessible areas of the Site. Limited exploratory demolition was performed on the interior and exterior of the buildings to evaluate the potential presence of hidden asbestos-containing materials using hand tools. Bulk samples representing individual homogenous areas of suspect materials were collected in a randomly distributed manner, in accordance with the methods outlined below.

Building materials exist in the form of thermal systems insulation (TSI), surfacing materials, and miscellaneous materials. The following illustrates the sampling strategy implemented by EFI:

(a) Surfacing materials (e.g., wall and ceiling plaster) - In a randomly distributed manner, collect bulk samples of surfacing materials, representative of each homogeneous area, and not assumed to be ACM.

(1) Collect at least three bulk samples from each homogeneous area that is less than or equal to 1,000 ft^2.

(2) Collect at least five bulk samples from each homogeneous area that is greater than 1,000 ft^2, but less than or equal to 5,000 ft^2.

(3) Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft^2.

(b) Thermal systems insulation (e.g., pipe fitting insulation, tank insulation, etc.)

(1) In a randomly distributed manner, collect at a minimum, three (3) bulk samples of thermal systems insulation material, representative of each homogeneous area, and not assumed to be ACM.

(2) Collect, at a minimum, one (1) bulk sample of patched thermal systems insulation, representative of each homogenous area, and not assumed to be ACM, providing the section of patch was less than 6 linear or square feet.

(3) Collect, at a minimum, three (3) representative bulk samples of each insulated mechanical system not assumed to be ACM, including, but not limited to cementitious material used on pipe fittings such as tees, elbows, or valves. Representative sampling was conducted in a manner sufficient as to identify whether each homogenous area is either asbestos or non-asbestos containing.

(4) Bulk samples are not required to be collected from any homogeneous area where the accredited asbestos inspector has determined that the thermal systems insulation is a non-suspect material (i.e., fiberglass, foam glass, rubber, or any other non-ACM).

(c) Miscellaneous materials (e.g., floor and ceiling tiles) - Collect, at a minimum, two (2) representative bulk sample of each miscellaneous material assumed to be ACM, including, but not limited to ceiling tiles, floor tiles, associated floor tile mastic, etc. Representative sampling was conducted in a manner sufficient as to identify whether each homogenous area is either asbestos or non-asbestos containing.

2.2 ASBESTOS-CONTAINING MATERIALS

The following suspect ACMs sampled by EFI were reported by EMSL as containing greater than or equal to one percent asbestos, the Massachusetts limit for classification as ACM:

- Brown Roof Skylight Caulking
- Interior White Window Glazing
- Black Paper Under Tile on Subfloor
- Gray Pebble Sheet Flooring Bottom Layer
- Floor Leveler Under Carpet
- 9” x 9” Gray Floor Tile
- Yellow Pattern Linoleum Under Plywood
- Joint Compound and Contaminated Sheetrock

The following suspect ACMs sampled by EFI were reported by EMSL as containing no detectable asbestos:

- Roof Seam Caulking
- Roof Vent Caulking
- Caulking at Chimney
- Gray Glazing Skylight Roof
- Black Mastic at Parapet Behind Rubber and Plywood
- 1’ x 1’ Squiggle Spline Ceiling Tile
- Paper Under Wood Floor 1st Floor
- Black Cove Base
- Brown Cove Base Mastic
- Ceiling Plaster
- Backing Sheetrock Behind Ceiling Plaster
- White Fiberglass Insulation Pipe Jacketing
- Mud on Fiberglass Pipe End
- 12” x 12” Blue Streak Floor Tile
- Yellow Mastic Associated With 12” x 12” Blue Streak Floor Tile
- Wall Plaster
- Sheetrock
- 2’ x 4’ Crow Feet Ceiling Tile
- Brown Stone Pattern Peel and Stick Floor Tile
- Clear Mastic Associated With Brown Stone Pattern Peel and Stick Floor Tile
- White Square With Brown Diamond Peel and Stick Floor Tile
- Clear Mastic Associated With White Square With Brown Diamond Peel and Stick Floor Tile
- Gray Sink Undercoat
- Interior White Window Caulking
- Fiberboard Under Plywood Subfloor
- 2’ x 2’ Crow Feet Ceiling Tile
- 2’ x 2’ White Squiggle Pattern Ceiling Tile
- 2’ x 2’ 4-Square Rough Finish Ceiling Tile
- 2’ x 2’ White Sand Finish Ceiling Tile
- 2’ x 2’ 4-Square Smooth Finish Ceiling Tile
- White Floor Tile Under Carpet Top Layer
- Yellow Mastic Associated With White Floor Tile Under Carpet
- Gray Floor Tile Under Carpet Bottom Layer
- Yellow Mastic Associated With Gray Floor Tile Under Carpet Bottom Layer
- Brown Cove Base
- Yellow Mastic Associated With Brown Cove Base
- Yellow Mastic on Wood Panel
- Tan Paper Under Hardwood Floor
- Black Sink Undercoat
- White Sink Undercoat
- Black Paper Under Carpet Pad
- Yellow Mastic Associated With Black Paper Under Carpet Pad
- Brown Stone Peel and Stick Floor Tile
- Clear Mastic Associated With Brown Stone Peel and Stick Floor Tile
- Gray Tile 2nd Layer
- Yellow Mastic Associated With Gray Tile 2nd Layer
- Blue Square Stick on Floor Tile
- Clear Mastic Associated With Blue Square Stick on Floor Tile
- Orange Sheet Flooring Under Yellow Pattern Linoleum

- Black Mastic Associated With Orange Sheet Flooring Under Yellow Pattern Linoleum
- Red Paper Under Orange Sheet Flooring Bottom Layer
- Wood Pattern Stick on Floor Tile
- Yellow Mastic Associated With Wood Pattern Stick on Floor tile
- Gray Square Stick on Floor Tile
- Clear Mastic Associated With Gray Square Stick on Floor Tile
- White Square Sheet Flooring
- Beige Square Sheet Flooring
- Yellow Mastic Associated With Beige Square Sheet Flooring
- Gray Sheet Flooring
- Tan Ceramic Wall Tile Grout
- Brown Ceramic Wall Tile Mastic
- White Ceiling Texture
- Gray Exterior Front Display Sealant
- White Exterior Window Caulking
- Exterior Gray Door Caulking
- Brown Sheet Flooring
- Gray Marble Sheet Flooring Top Layer
- Yellow mastic Associated With Gray Marble Sheet Flooring Top Layer
- Black Mastic Associated With Gray Pebble Sheet Flooring Bottom Layer
- Black Cove Base
- Yellow Mastic Associated With Black Cove Base
- Faux Wood Floor Paneling
- Yellow Mastic Associated With Faux Wood Floor Paneling
- Gray Floor Leveler Under Flooring
- Black Mastic Associated With 9” x 9” Gray Floor Tile

An inventory of the types, locations and estimated quantities of ACMs identified during the survey is presented in Table 1.

Samples of suspect asbestos-containing materials were submitted under chain of custody protocol to EMSL Analytical, Inc. (EMSL) of Woburn, Massachusetts, a Massachusetts-licensed laboratory. Samples were analyzed with a standard 5-day turnaround time using polarized light microscopy with dispersion staining (PLM/DS) in accordance with Method 600/R-93/116. EMSL is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos fiber analysis, which is administered by the National Institute of Standards and Testing (NIST).

The PLM/DS analytical method is modeled after 40 CFR Part 763, Subpart F, Attachment A: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples." By using the PLM/DS method, a trained microscopist is able to identify and distinguish between asbestos group minerals and other fibrous materials such as cellulose (paper), mineral (rock), wood, or glass fiber. The quantity of each of these substances is estimated on a visual basis and recorded as a percent. If a material contains greater than or equal one percent asbestos, it is considered to be an asbestos-containing material under Massachusetts Department of Environmental Protection (MassDEP) asbestos regulations.

Copies of the asbestos laboratory analytical reports are presented in Attachment B.

2.3 ADDITIONAL CONSIDERATIONS/ SPECIFIC RECOMMENDATIONS

EFI evaluated areas of the building that were reasonably accessible at the time of the survey. EFI's survey scope of work included visual inspection and assessment of areas behind sheetrock ceilings and walls only in locations where exploratory demolition using hand tools was possible.

EFI recommends that asbestos-containing materials listed above be removed and properly disposed by a Massachusetts licensed asbestos abatement contractor in accordance with MassDEP and MassDLS asbestos regulations.

EFI performed roof sampling during the survey to determine whether asbestos-containing roofing materials are present.

EFI recommends that any hidden materials uncovered during future demolition activities, and not identified within this report, be assumed to be asbestos-containing until laboratory analysis proves otherwise. EFI's survey did not include an assessment for the presence of underground steam lines, and underground transite water/sewer lines that may be present at the Site.

2.4 GENERAL RECOMMENDATIONS

EFI recommends that asbestos-containing materials that are to be impacted by the proposed demolition activities at the Site building be properly removed, packaged, and disposed by a Massachusetts-licensed Asbestos Abatement Contractor. The abatement must be completed in accordance with all requirements of MassDLS asbestos regulations (453 CMR 6.00), MassDEP asbestos regulations (310 CMR 7.00 & 7.15); USEPA National Emissions Standard for Hazardous Air Pollutant (NESHAP) regulations (40 CFR Part 61); and OSHA regulations (29 CFR 1926.1101), including all applicable local ordinances and policy statements.

If suspect ACMs other than the above-referenced materials are identified during demolition activities, EFI recommends that they be sampled by a Massachusetts-licensed asbestos inspector and analyzed by a Massachusetts-licensed asbestos analytical laboratory. EFI is available to assist with abatement contractor oversight and air monitoring as required by applicable state and federal asbestos regulations.

3.0 LEAD-BASED PAINT INSPECTION AND METHODOLOGY

During the survey, EFI performed limited testing for lead-based paint in accessible areas of the interior and exterior of the Site building, which involved the collection of paint chip samples from representative painted painted/coated surfaces. Lead analysis was conducted by EMSL with a standard 5-day turnaround time by EMSL using atomic absorption spectrometry (AAS) in accordance with US EPA method SW846-7420.

3.1 SUMMARY OF FINDINGS

The EPA defines "lead-based paint" as paints or coatings containing lead in concentrations of greater than 0.5 percent by weight or 1.0 mg/cm^2. EMSL reported that the dark green paint on the concrete floor contained a lead concentration of 2.2% by weight. These results are greater than the US EPA regulatory limit of 0.5% by weight for classification as a "lead based paint." The gray paint on concrete floor, red paint on concrete floor, yellow paint on concrete floor, light green paint on block wall, purple paint on sheetrock walls, white paint on brick walls, white paint on sheetrock walls, lime green paint on sheetrock walls, cream paint on sheetrock walls, green paint on wood walls, cream paint on exterior wood door/frame, tan paint on exterior brick wall, blue paint on sheetrock wall, and pink paint on sheetrock walls and frames were reported by EMSL as containing a lead concentration of below the laboratory detection limit of 0.010 % by weight.

A copy of the lead paint laboratory analytical report is presented in Attachment C.

3.2 REGULATORY IMPLICATIONS AND RECOMMENDATIONS

Regulatory Implications

OSHA defines any detectable concentration of lead in paint as a potential lead exposure hazard to workers performing construction or demolition work that disturbs these surfaces, as even small concentrations of lead can result in unacceptable employee exposures. The level of exposure varies based upon the lead concentration, method of removal, and other workplace conditions. Since these conditions can vary greatly, the OSHA Lead Construction Standard (29 CFR 1926.62) requires exposure monitoring or the use of historical or objective monitoring data to ensure that employee exposures do not exceed the OSHA action level of 30 micrograms per cubic meter of air (µg/m^3) and the OSHA permissible exposure limit (PEL) of 50 µg/m^3.

OSHA requires that contractors monitor employee exposures if coated surfaces with paint containing lead are impacted during construction or demolition. Contractors and employers of staff who may disturb these materials are obligated to perform a negative exposure assessment in accordance with OSHA regulations to document that exposure to lead does not exceed the OSHA action level and the PEL.

OSHA states that the employer must treat employees as if they would be exposed above the PEL until the employer 1) performs an exposure assessment that documents that employees are not exposed above the PEL or 2) can supply prior data regarding the same type of work which may exempt them from the standard.

The OSHA Lead Construction Standard applies to many construction activities including the following:

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

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

The contractor must also characterize and dispose of all dust, debris, and blast media (if applicable) in accordance with US EPA and MAssDEP Protection regulations. This includes waste characterization of dust, debris and blast media generated during paint removal activities via the toxicity characteristic leaching procedure (TCLP).

Waste Disposal Implications

Waste disposal is governed by the EPA's Resource Conservation and Recovery Act (RCRA) regulations, which distinguish between solid wastes and hazardous wastes. Solid wastes include general construction debris and are subject to minimum handling, transportation, and landfill disposal requirements under RCRA regulations. Hazardous wastes, including certain lead-containing materials, are subject to restrictions designed to prevent the hazardous materials from entering the environment. Lead waste is classified as hazardous or non-hazardous based on the results of the TCLP testing. The leachability test measures whether or not lead leaches from the waste in excess of the regulated level of 5.0 mg/L. If the results of the TCLP analysis exceed this level, the waste must be handled, transported and disposed as a hazardous waste in an approved waste site, reclamation facility or incinerator site. EPA's regulations require the TCLP test be performed so that it represents the matrix and material of the waste stream.

Recommendations

It is recommended that lead TCLP samples be collected and analyzed prior to disposal. If the TCLP results for the building materials are below 5.0 mg/L, the materials can be disposed as construction debris. If the TCLP results are greater than 5.0 mg/L, the materials must be disposed as a lead hazardous waste.

It is also recommended that construction or demolition personnel conducting work at the facility comply with applicable OSHA Lead Construction Standard requirements during all construction activities at the Site.

4.0 PCB/MERCURY-CONTAINING LIGHT FIXTURES (UNIVERSAL WASTE)

The primary concern regarding the disposal of used light ballasts is the health risk associated with exposure to PCBs. Fluorescent light ballasts contain a small capacitor that may contain high concentrations of PCBs (greater than 90% pure PCBs or 900,000 ppm). These chemical compounds were widely used as insulators in electrical equipment such as capacitors, switches, and voltage regulators through the late 1970s. Fluorescent light ballasts manufactured prior to 1979 may contain small quantities of PCBs. Recently manufactured fluorescent light ballasts are required to have "No PCB" labels. Light ballasts that do not have "No PCB" labels should be treated as PCB-containing and handled/disposed of accordingly. In addition, if light ballasts do not have "No PCB" labels, the manufacturer should be contacted to ascertain the presence of PCBs. Following the ban of PCB production, in 1979 manufacturers began using di (2-ethylhexyl) phthalate (DEHP) as a replacement to PCBs. DEHP is listed as a hazardous substance under the USEPA's Superfund regulations. Generators discarding of light ballasts should take the same precautions with their DEHP ballasts as they do with their PCB ballasts to avoid any future liabilities.

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

4.1 SUMMARY OF FINDINGS

EFI conducted a survey to determine the estimated number of fluorescent light bulbs and ballasts located throughout the buildings. Investigative findings indicate that ballasts located within the building are either unlabeled or have labels that identify them as "No PCBs." It is recommended that all ballasts be removed from the building and disposed in accordance with applicable federal, state, and local regulations. EFI recommends recycling of fluorescent light bulbs in accordance with applicable state and federal regulations. A detailed inventory of fluorescent light tubes and ballasts is provided in Table 2.

5.0 OTHER HAZARDOUS MATERIALS

EFI performed an inventory of hazardous chemicals, petroleum and mechanical equipment located within the building that will require special handling and disposal prior to building demolition activities. During the survey, EFI identified computer monitors, batteries, door arms, x-ray machine, dentist chair, fixer/developer, refrigerators, microwaves, air conditioning units, thermostats/switches, equipment containing CFCs/refrigerant, suspect, and fire extinguishers within the Site building. An inventory of the identified building-related hazardous materials is presented in Table 2.

It is recommended that identified Other Hazardous Materials at the Site building be properly removed and disposed by a qualified contractor.

TABLE 1

ASBESTOS-CONTAINING MATERIALS INVENTORY

ACM MATERIALS INVENTORY

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

SF – Square Feet

TABLE 2

UNIVERSAL WASTE & HAZARDOUS MATERIALS INVENTORY

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	1st Floor	1	Unit
Fixer/Developer	1st Floor	5	Gallons
Dental Chair Hydraulics	1st Floor	3	Units
Refrigerators	2nd Floor	7	Units
Microwaves	2nd Floor	2	Units
Air Conditioner	2nd Floor	1	Unit

ATTACHMENT A

PHOTOGRAPHS

Roof Seam Caulking

Roof Vent Caulking

Chimney Caulking

Roof Skylight Caulking

Roof Skylight Glazing

Black Mastic at Parapet Behind Rubber and Plywood

1’ x 1’ White Squiggle Spline Ceiling Tile

Paper Under 1st Floor Wood Floor

Black Cove Base and Associated Mastic

Ceiling Plaster and Backing Sheetrock

12” x 12” Blue Streak Floor Tile and Associated Mastic

Wall Plaster

Sheetrock and Joint Compound

Brown Stone Pattern Peel and Stick Floor Tile and Associated Mastic

White Square With Brown Diamond Pell and Stick Floor Tile and Associated Mastic

Gray Sink Undercoat

White Interior Window Caulking

White Interior Window Glazing

2’ x 2’ Crow Feet Ceiling Tile

2’ x 2’ White Squiggle Pattern Ceiling Tile

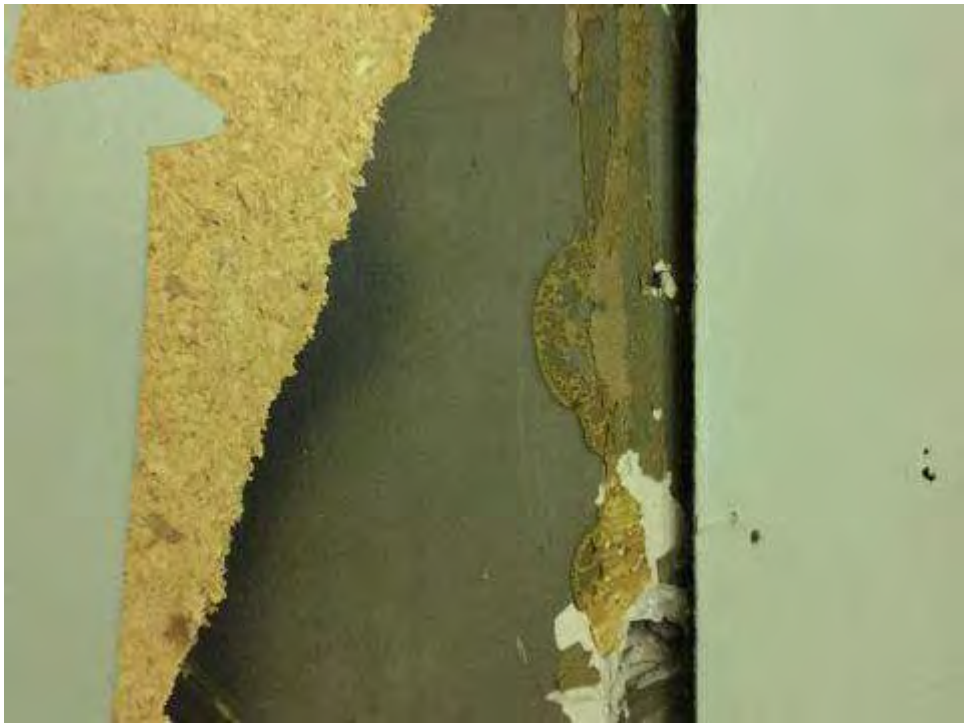
2’ x 2’ 4-Square Rough Finish Ceiling Tile

2’ x 2’ White Sand Finish Ceiling Tile

White Floor Tile Under Carpet Top Layer and Associated Mastic

Gray Floor Tile Under Carpet Bottom Layer and Associated Mastic

Black Paper Under Tile on Subfloor



Yellow Wood Panel Mastic

Tan Paper Under Hardwood Floors

Black Sink Undercoating

Yellow Capet Pad Mastic, Black Paper and Floor Leveler Compound

Blue Square Stick on Floor Tile and Associated Mastic

Yellow Pattern Linoleum Under Plywood, Orange Sheet Flooring and Red Paper and Associated Mastics

Wood Pattern Stick on Floor Tile and Associated Mastic

Gray Square Stick on Floor Tile and Associated Mastics

Gray Sheet Flooring and Associated Mastic

Ceramic Wall Tile Grout and Mastic

Textured Ceiling

Brown Sheet Flooring

Gray Marble Sheet Flooring Top Layer and Gray Pebble Sheet Flooring Bottom Layer and Associated Mastics

Tan Cove Base and Associated Mastic

Faux Wood Floor Paneling, Black Cove Base and Associated Mastics

9” x 9” Gray Floor Tile and Associated Mastic

Exterior Gray Front Display Sealant

Exterior White Window Caulking

Exterior Gray Door Frame Caulking

ATTACHMENT B

ASBESTOS LABORATORY REPORT

EMSL Analytical, Inc.

5 Constitution Way, Unit A Woburn, MA 01801

Tel/Fax: (781) 933-8411 / (781) 933-8412

http://www.EMSL.com / bostonlab@emsl.com

EMSL Order:	131805654
Customer ID:	EAFI66
Customer PO:	
Project ID:	

Attention:	John Vaz	**Phone:**	(978) 688-3736
	EFI Global, Inc.	**Fax:**	(978) 688-5494
	155 West Street, Suite 6	**Received Date:**	08/20/2018 1:44 PM
	Wilmington, MA 01887	**Analysis Date:**	08/27/2018
		Collected Date:	08/20/2018

Project: 020.00049 / 509-519 Moody St., Waltham, MA

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
001A *131805654-0001*	Roof - Roof Seam Caulking - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001B *131805654-0002*	Roof - Roof Seam Caulking - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002A *131805654-0003*	Roof - Black Roof Vent Caulking	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002B *131805654-0004*	Roof - Black Roof Vent Caulking	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
003A *131805654-0005*	Roof - Black Caulk @ Chimney	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
003B *131805654-0006*	Roof - Black Caulk @ Chimney	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
004A *131805654-0007*	Roof - Brown Roof Skylight Caulk	Brown Fibrous Homogeneous		94% Non-fibrous (Other)	6% Chrysotile
004B *131805654-0008*	Roof - Brown Roof Skylight Caulk				Positive Stop (Not Analyzed)
005A *131805654-0009*	Roof - Gray Skylight Roof Glaze	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
005B *131805654-0010*	Roof - Gray Skylight Roof Glaze	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
006A *131805654-0011*	Roof - Black Mastic @ Parapet Behind Rubber & Plywood	Black Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
006B *131805654-0012*	Roof - Black Mastic @ Parapet Behind Rubber & Plywood	Black Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
007A *131805654-0013*	Basement Office 1 - 1x1 White Squiggle Spline Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
007B *131805654-0014*	Basement Office 1 - 1x1 White Squiggle Spline Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
008A *131805654-0015*	1st Floor Dentist Office, Vacant Office - Paper Under 1st Floor Wood Floor	Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
008B *131805654-0016*	1st Floor Dentist Office, Vacant Office - Paper Under 1st Floor Wood Floor	Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
009A *131805654-0017*	Basement Office 1 - Black Cove Base	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
009B *131805654-0018*	Basement Office 1 - Black Cove Base	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
010A *131805654-0019*	Basement Office 1 - Associated Brown Mastic	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
010B *131805654-0020*	Basement Office 1 - Associated Brown Mastic	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
011A *131805654-0021*	Basement Side Storage 2 - Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
011B *131805654-0022*	Basement Side Storage 2 - Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
011C *131805654-0023*	Basement Side Storage 2 - Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
012A *131805654-0024*	Basement Side Storage 2 - Backing Sheetrock Behind Ceiling Plaster	Tan/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
012B *131805654-0025*	Basement Side Storage 2 - Backing Sheetrock Behind Ceiling Plaster	Tan/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
013A *131805654-0026*	Basement Side Storage 2 - White Fiberglass Insulation Pipe Jacketing	White/Silver Fibrous Homogeneous	45% Cellulose 15% Glass	40% Non-fibrous (Other)	None Detected
013B *131805654-0027*	Basement Side Storage 2 - White Fiberglass Insulation Pipe Jacketing	White/Silver Fibrous Homogeneous	45% Cellulose 15% Glass	40% Non-fibrous (Other)	None Detected
014A *131805654-0028*	Basement Side Storage 2 - Mud on Fiberglass Pipe End	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
014B *131805654-0029*	Basement Side Storage 2 - Mud on Fiberglass Pipe End	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
015A *131805654-0030*	Basement Hall Bathrooms - 12x12 Blue Streak Floor Tile	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
015B *131805654-0031*	Basement Hall Bathrooms - 12x12 Blue Streak Floor Tile	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
016A *131805654-0032*	Basement Hall Bathrooms - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
016B *131805654-0033*	Basement Hall Bathrooms - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017A *131805654-0034*	Basement Main Storage - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017B *131805654-0035*	Basement Main Storage - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017C *131805654-0036*	Basement Main Storage - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018A *131805654-0037*	Basement Main Storage - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018B *131805654-0038*	Basement Main Storage - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018C *131805654-0039*	Basement Main Storage - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
019A *131805654-0040*	Basement Hall - Sheetrock	Tan/White Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
020A *131805654-0041*	Basement Hall Office 3 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
020B *131805654-0042*	Basement Hall Office 3 - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
021A *131805654-0043*	1st Floor 517 Space - 2x4 Crow Feet Ceiling Tiles	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
021B *131805654-0044*	1st Floor 517 Space - 2x4 Crow Feet Ceiling Tiles	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
022A *131805654-0045*	1st Floor 517 Space Bathroom - Brown Stone Pattern Peel 'N Stick Floor Tile	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
022B *131805654-0046*	1st Floor 517 Space Bathroom - Brown Stone Pattern Peel 'N Stick Floor Tile	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
023A *131805654-0047*	1st Floor 517 Space Bathroom - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
023B *131805654-0048*	1st Floor 517 Space Bathroom - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
024A *131805654-0049*	1st Floor 517 Space Kitchen - White Square w/Brown Diamond Peel & Stick Floor Tile	Gray/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
024B *131805654-0050*	1st Floor 517 Space Kitchen - White Square w/Brown Diamond Peel & Stick Floor Tile	Gray/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
025A *131805654-0051*	1st Floor 517 Space Kitchen - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
025B *131805654-0052*	1st Floor 517 Space Kitchen - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
026A *131805654-0053*	1st Floor 517 Space Kitchen - Gray Sink Undercoat	Gray Non-Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
026B *131805654-0054*	1st Floor 517 Space Kitchen - Gray Sink Undercoat	Gray Non-Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
019B *131805654-0055*	1st Floor 517 Space Bathroom - Sheetrock	Gray/Tan Fibrous Homogeneous	12% Cellulose	88% Non-fibrous (Other)	None Detected
020C *131805654-0056*	1st Floor 517 Space Bathroom Hall - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
020D *131805654-0057*	1st Floor 517 Space Bathroom Hall - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
027A *131805654-0058*	1st Floor 517 Space Entrance Foyer - Interior Window - White Caulk on Window	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
027B *131805654-0059*	1st Floor 517 Space Entrance Foyer - Interior Window - White Caulk on Window	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
028A *131805654-0060*	1st Floor 517 Space Entrance Foyer - Interior Window - White Glaze on Window	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
028B *131805654-0061*	1st Floor 517 Space Entrance Foyer - Interior Window - White Glaze on Window				Positive Stop (Not Analyzed)
029A *131805654-0062*	1st Floor 517 Space Conference Room - Fiberboard Under Plywood Subfloor	Gray Fibrous Homogeneous	75% Cellulose 15% Synthetic	10% Non-fibrous (Other)	None Detected
029B *131805654-0063*	1st Floor 517 Space Conference Room - Fiberboard Under Plywood Subfloor	Gray Fibrous Homogeneous	75% Cellulose 15% Synthetic	10% Non-fibrous (Other)	None Detected
030A *131805654-0064*	1st Floor 515 Space - 2x2 Crow Feet Ceiling Tile	Gray/White Fibrous Homogeneous	40% Cellulose 30% Min. Wool	30% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
030B *131805654-0065*	1st Floor 515 Space - 2x2 Crow Feet Ceiling Tile	Gray/White Fibrous Homogeneous	40% Cellulose 30% Min. Wool	30% Non-fibrous (Other)	None Detected
031A *131805654-0066*	1st Floor 515 Space - 2x2 White Squiggle Pattern Ceiling Tile	Gray/White Fibrous Homogeneous	40% Cellulose 30% Min. Wool	30% Non-fibrous (Other)	None Detected
031B *131805654-0067*	1st Floor 515 Space - 2x2 White Squiggle Pattern Ceiling Tile	Gray/White Fibrous Homogeneous	40% Cellulose 30% Min. Wool	30% Non-fibrous (Other)	None Detected
032A *131805654-0068*	1st Floor 515 Space - 2x2 4-Square Rough Finish Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
032B *131805654-0069*	1st Floor 515 Space - 2x2 4-Square Rough Finish Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
033A *131805654-0070*	1st Floor 515 Space - 2x2 White Sand Finish Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
033B *131805654-0071*	1st Floor 515 Space - 2x2 White Sand Finish Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
011D *131805654-0072*	1st Floor 515 Space - Ceiling Plaster	Gray/Tan Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
011E *131805654-0073*	1st Floor 515 Space - Ceiling Plaster	Gray Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
034A *131805654-0074*	1st Floor 515 Space - 2s2 4-Square Smooth Finish Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
034B *131805654-0075*	1st Floor 515 Space - 2s2 4-Square Smooth Finish Ceiling Tile	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	35% Non-fibrous (Other)	None Detected
017D *131805654-0076*	1st Floor 515 Space - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017E *131805654-0077*	1st Floor 515 Space - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018D *131805654-0078*	1st Floor 515 Space - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018E *131805654-0079*	1st Floor 515 Space - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
035A *131805654-0080*	1st Floor 515 Space - White Floor Tile Under Carpet - Top Layer	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
035B *131805654-0081*	1st Floor 515 Space - White Floor Tile Under Carpet - Top Layer	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
036A *131805654-0082*	1st Floor 515 Space - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
036B *131805654-0083*	1st Floor 515 Space - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
037A *131805654-0084*	1st Floor 515 Space - Gray Floor Tile Under Carpet - Bottom Layer	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
037B *131805654-0085*	1st Floor 515 Space - Gray Floor Tile Under Carpet - Bottom Layer	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
038A *131805654-0086*	1st Floor 515 Space - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
038B *131805654-0087*	1st Floor 515 Space - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
039A *131805654-0088*	1st Floor 515 Space - Black PaperUnder Tile on Subfloor	Tan/Black Fibrous Homogeneous	65% Cellulose	32% Non-fibrous (Other)	3% Chrysotile
Chrysotile detected in residual tan floor tile associated with black paper.					
039B *131805654-0089*	1st Floor 515 Space - Black PaperUnder Tile on Subfloor				Positive Stop (Not Analyzed)
040A *131805654-0090*	1st Floor 515 Space 509 Space Reception - Brown Covebase	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
040B *131805654-0091*	1st Floor 515 Space 509 Space Reception - Brown Covebase	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
041A *131805654-0092*	1st Floor 515 Space 509 Space Reception - Associated Yellow Adhesive	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
041B *131805654-0093*	1st Floor 515 Space 509 Space Reception - Associated Yellow Adhesive	Brown/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042A *131805654-0094*	1st Floor 515 Space - Yellow Mastic on Wood Panel	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
042B *131805654-0095*	1st Floor 515 Space - Yellow Mastic on Wood Panel	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
020E *131805654-0096*	1st Floor 515 Space - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
043A *131805654-0097*	2nd Floor Floor - Paper Under Hardwood Floor	Tan Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
043B *131805654-0098*	2nd Floor Floor - Paper Under Hardwood Floor	Tan Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
044A *131805654-0099*	2nd Floor Units 6, 7 Kitchens - Black Sink Undercoat	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
044B *131805654-0100*	2nd Floor Units 6, 7 Kitchens - Black Sink Undercoat	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
045A *131805654-0101*	2nd Floor Units 2, 3 Kitchens - White Sink Undercoat	White Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
045B *131805654-0102*	2nd Floor Units 2, 3 Kitchens - White Sink Undercoat	White Non-Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
046A *131805654-0103*	2nd Floor Common Area - Black Paper Under Carpet Pad	Black Fibrous Homogeneous	60% Cellulose 25% Synthetic	15% Non-fibrous (Other)	None Detected
046B *131805654-0104*	2nd Floor Common Area - Black Paper Under Carpet Pad	Black Fibrous Homogeneous	60% Cellulose 25% Synthetic	15% Non-fibrous (Other)	None Detected
047A *131805654-0105*	2nd Floor Common Area - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
047B *131805654-0106*	2nd Floor Common Area - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
048A *131805654-0107*	2nd Floor Common Area - Floor Leveler Under Carpet	White Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
048B *131805654-0108*	2nd Floor Common Area - Floor Leveler Under Carpet				Positive Stop (Not Analyzed)
049A *131805654-0109*	2nd Floor Unit 1, Unit 3 Kitchen - Brown Stone Peel & Stick Floor Tile	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
049B *131805654-0110*	2nd Floor Unit 1, Unit 3 Kitchen - Brown Stone Peel & Stick Floor Tile	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
050A *131805654-0111*	2nd Floor Unit 1, Unit 3 Kitchen - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
050B *131805654-0112*	2nd Floor Unit 1, Unit 3 Kitchen - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
051A *131805654-0113*	2nd Floor Unit 3 Kitchen - Gray Tile 2nd Layer	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
051B *131805654-0114*	2nd Floor Unit 3 Kitchen - Gray Tile 2nd Layer	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
052A *131805654-0115*	2nd Floor Unit 3 Kitchen - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
052B *131805654-0116*	2nd Floor Unit 3 Kitchen - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
053A *131805654-0117*	2nd Floor Unit 1, Unit 7 Bathrooms - Blue Square Stick on Floor Tile	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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EMSL Analytical, Inc.
5 Constitution Way, Unit A Woburn, MA 01801
Tel/Fax: (781) 933-8411 / (781) 933-8412
http://www.EMSL.com / bostonlab@emsl.com

EMSL Order: 131805654
Customer ID: EAFI66
Customer PO:
Project ID:

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
053B *131805654-0118*	2nd Floor Unit 1, Unit 7 Bathrooms - Blue Square Stick on Floor Tile	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
054A *131805654-0119*	2nd Floor Unit 1, Unit 7 Bathrooms - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
054B *131805654-0120*	2nd Floor Unit 1, Unit 7 Bathrooms - Associated Clear Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
055A *131805654-0121*	2nd Floor Unit 3 Bathroom - Yellow Pattern Linoleum Under Plywood	Various Fibrous Homogeneous		80% Non-fibrous (Other)	20% Chrysotile
055B *131805654-0122*	2nd Floor Unit 3 Bathroom - Yellow Pattern Linoleum Under Plywood				Positive Stop (Not Analyzed)
056A *131805654-0123*	2nd Floor Unit 3 Bathroom - Orange Sheet Flooring Under Yellow Pattern Linoleum	Various Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
056B *131805654-0124*	2nd Floor Unit 3 Bathroom - Orange Sheet Flooring Under Yellow Pattern Linoleum	Various Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
057A *131805654-0125*	2nd Floor Unit 3 Bathroom - Associated Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
057B *131805654-0126*	2nd Floor Unit 3 Bathroom - Associated Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
058A *131805654-0127*	2nd Floor Unit 3 Bathroom - Red Paper Under Orange Sheet Flooring Bottom Layer	Red/Black Fibrous Homogeneous	75% Cellulose	25% Non-fibrous (Other)	None Detected
058B *131805654-0128*	2nd Floor Unit 3 Bathroom - Red Paper Under Orange Sheet Flooring Bottom Layer	Red/Black Fibrous Homogeneous	75% Cellulose	25% Non-fibrous (Other)	None Detected
059A *131805654-0129*	2nd Floor Unit 3 Living Room - Wood Pattern Stick on Floor Tile	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
059B *131805654-0130*	2nd Floor Unit 3 Living Room - Wood Pattern Stick on Floor Tile	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 08/27/2018 17:40:30

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
060A *131805654-0131*	2nd Floor Unit 3 Living Room - Yellow Mastic Associated w/059A	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
060B *131805654-0132*	2nd Floor Unit 3 Living Room - Yellow Mastic Associated w/059B	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
061A *131805654-0133*	2nd Floor Unit 2 Kitchen - Gray Square Stick on Floor Tile	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
061B *131805654-0134*	2nd Floor Unit 2 Kitchen - Gray Square Stick on Floor Tile	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
062A *131805654-0135*	2nd Floor Unit 2 Kitchen - Associated Gray Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
062B *131805654-0136*	2nd Floor Unit 2 Kitchen - Associated Gray Mastic	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
063A *131805654-0137*	2nd Floor Unit 2 Bathroom - White Square Sheet Flooring	Gray/White Fibrous Homogeneous	25% Cellulose 3% Glass	72% Non-fibrous (Other)	None Detected
063B *131805654-0138*	2nd Floor Unit 2 Bathroom - White Square Sheet Flooring	Gray/White Fibrous Homogeneous	25% Cellulose 3% Glass	72% Non-fibrous (Other)	None Detected
064A *131805654-0139*	2nd Floor Unit 4 Kitchen - Beige Square Sheet Flooring	Beige Non-Fibrous Homogeneous	20% Cellulose 5% Glass	75% Non-fibrous (Other)	None Detected
064B *131805654-0140*	2nd Floor Unit 4 Kitchen - Beige Square Sheet Flooring	Beige Non-Fibrous Homogeneous	20% Cellulose 5% Glass	75% Non-fibrous (Other)	None Detected
065A *131805654-0141*	2nd Floor Unit 4 Kitchen - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
065B *131805654-0142*	2nd Floor Unit 4 Kitchen - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
066A *131805654-0143*	2nd Floor Unit 4 Bathroom - Gray Sheet Flooring	Gray Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
066B *131805654-0144*	2nd Floor Unit 4 Bathroom - Gray Sheet Flooring	Gray Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
067A *131805654-0145*	2nd Floor Unit 6 Bathroom - Ceramic Wall Tile Grout	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
067B *131805654-0146*	2nd Floor Unit 6 Bathroom - Ceramic Wall Tile Grout	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
068A *131805654-0147*	2nd Floor Unit 6 Bathroom - Ceramic Wall Tile Adhesive	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
038B *131805654-0148*	2nd Floor Unit 6 Bathroom - Ceramic Wall Tile Adhesive	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017F *131805654-0149*	2nd Floor Unit 3, Unit C - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017G *131805654-0150*	2nd Floor Unit 3, Unit C - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018F *131805654-0151*	2nd Floor Unit 3, Unit C - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018G *131805654-0152*	2nd Floor Unit 3, Unit C - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069A *131805654-0153*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069B *131805654-0154*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069C *131805654-0155*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069D *131805654-0156*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069E *131805654-0157*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069F *131805654-0158*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
069G *131805654-0159*	2nd Floor Unit 7, 6, 1, 2, 3, 4 - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
070A *131805654-0160*	Exterior Front Displays - Gray Exterior Sealant	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
070B *131805654-0161*	Exterior Front Displays - Gray Exterior Sealant	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
071A *131805654-0162*	Exterior Windows - White Exterior Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
071B *131805654-0163*	Exterior Windows - White Exterior Window Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
072A *131805654-0164*	Exterior Rear Doors - Exterior Gray Door Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
072B *131805654-0165*	Exterior Rear Doors - Exterior Gray Door Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
011F *131805654-0166*	1st Floor 509 Space Reception, Prep Area - Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
011G *131805654-0167*	1st Floor 509 Space Reception, Prep Area - Ceiling Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
073A *131805654-0168*	1st Floor 509 Space X-Ray Room - Brown Sheet Flooring	Brown Non-Fibrous Homogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
073B *131805654-0169*	1st Floor 509 Space X-Ray Room - Brown Sheet Flooring	Brown Non-Fibrous Homogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
020F *131805654-0170*	1st Floor 509 Space Exam 1, Lab - Joint Compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
020G *131805654-0171*	1st Floor 509 Space Exam 1, Lab - Joint Compound	White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
074A *131805654-0172*	1st Floor 509 Space Exam 3 Bathroom - Gray Marble Sheet Flooring, Top Layer	Gray/Tan Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
074B *131805654-0173*	1st Floor 509 Space Exam 3 Bathroom - Gray Marble Sheet Flooring, Top Layer	Gray/Tan Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
075A *131805654-0174*	1st Floor 509 Space Exam 3 Bathroom - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
075B *131805654-0175*	1st Floor 509 Space Exam 3 Bathroom - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
076A *131805654-0176*	1st Floor 509 Space Exam 3 Bathroom - Gray Pebble Sheet Flooring, Bottom Layer	Gray/White Fibrous Homogeneous		85% Non-fibrous (Other)	15% Chrysotile
076B *131805654-0177*	1st Floor 509 Space Exam 3 Bathroom - Gray Pebble Sheet Flooring, Bottom Layer				Positive Stop (Not Analyzed)
077A *131805654-0178*	1st Floor 509 Space Exam 3 Bathroom - Associated Black Mastic	Tan/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
077B *131805654-0179*	1st Floor 509 Space Exam 3 Bathroom - Associated Black Mastic	Tan/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
078A *131805654-0180*	1st Floor 509 Space Back Office Exam 2 - Black Cove Base	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
078B *131805654-0181*	1st Floor 509 Space Back Office Exam 2 - Black Cove Base	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
079A *131805654-0182*	1st Floor 509 Space Back Office Exam 2 - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
079B *131805654-0183*	1st Floor 509 Space Back Office Exam 2 - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
080A *131805654-0184*	1st Floor 509 Space Reception Hallway - Faux Wood Floor Paneling	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
080B *131805654-0185*	1st Floor 509 Space Reception Hallway - Faux Wood Floor Paneling	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
081A *131805654-0186*	1st Floor 509 Space Reception Hallway - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
081B *131805654-0187*	1st Floor 509 Space Reception Hallway - Associated Yellow Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
082A *131805654-0188*	1st Floor 509 Space Reception Hallway - Gray Leveler Under Flooring	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
082B *131805654-0189*	1st Floor 509 Space Reception Hallway - Gray Leveler Under Flooring	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
083A *131805654-0190*	1st Floor 509 Space Back Foyer Storage - 9x9 Gray Floor Tile	Gray Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
083B *131805654-0191*	1st Floor 509 Space Back Foyer Storage - 9x9 Gray Floor Tile				Positive Stop (Not Analyzed)
084A *131805654-0192*	1st Floor 509 Space Back Foyer Storage - Associated Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
084B *131805654-0193*	1st Floor 509 Space Back Foyer Storage - Associated Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Analyst(s)
Kevin McKenzie (186)

Steve Grise, Laboratory Manager
or Other Approved Signatory

Initial report from: 08/27/2018 17:40:30

OrderID: 131805654

131805654

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BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	John Vaz	**Bill To:**	Accounts Payable
Company:	EFI Global, Inc.	**Address:**	Same
Address:	155 West Street	**City, State, Zip:**	Same
	Suite 6	**Telephone:**	800-659-1202
City, State, Zip:	Wilmington, MA 01887	**Fax:**	978-688-5494

Project Information

Project No. and Description:	020.00649. 509-589 Moody Street Waltham MA
Email Report to:	Lynda.McDermott@efiglobal.com; Sean.Cassidy@efiglobal.com; Jessica.Rauseo@efiglobal.com
Alternate (Your Email):	John.vaz@efiglobal.com

Requested Turnaround Time:

☐ 3hour	☐ 6 hour	☐ 1 day (24hr)	☐ 2 day (48hr)	☐ 3 day (72 hr)	☐ 4 day (96 hr)	☒ 1 week	☐ 2 week

Media and Methodology

Type of Analysis:	PLM Asbestos	**Check for Positive Stop:**	☒
Notes:	Please analyze all plaster and joint compound samples.		

Sample ID	Type of Material	Location
001A,B.	Roof Seam Caulking - Black	Roof
002A,B	Black Roof Vent Caulking	Roof
003A,B.	Black Caulk @ Chimney	Roof.
004A,B	Brown Roof Skylight Caulk	Roof
005A,B.	Grey Skylight Roof Glaze	Roof
006A,B	Black Mastic @ Parapet Behind Rubber + Plywood	Roof
007A,B.	1x1 White Squiggle Spline Ceiling Tile.	Basement Office 1
008A,B	Paper Under 1ST Floor Wood Floor.	1ST Floor Dentist office, Vacant office.
009A,B	Black Cove Base	Basement Office 1
010A,B.	Associated Brown Mastic -	" " "
011A,B,C	Ceiling Plaster	Basement Side Storage 2

Total Number of Samples Submitted: _____ Date Collected: 8/20/14

Samplers Name: John Vaz Samplers Signature: [signature]

Relinquished By (EFI): Rich Murphy Date: 8/20/18 Time: _____

Received By (Lab): _____ Date: _____ Time: _____

Page 1 Of 4

REC'D CBM 1344 AUG 20 2018 Walk in EMSL-BOSTON

OrderID: 131805654

131805654

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Sample ID	Type of Material	Location
012A,B.	Backing Sheetrock Behind Ceiling Plaster	Basement Side Storage 2.
013A,B	White Fiberglass Insulation Pipe Insulating	" " " "
014A,B	Mud on Fiberglass Pipe End	" " " "
015A,B	12x12 Blue Streak Floor Tile	Basement Hall Bathrooms
016A,B	Associated Yellow Mastic.	" " "
017A,B,C	Skim Coat Plaster	Basement Main Storage.
018A,B,C	Coarse Coat to Plaster.	" " "
019A	Sheetrock	Basement Hall
020A,B.	Joint Compound	" " , Office 3.
021A,B.	2x4 Crow Feet Ceiling Tiles	1ST Floor 517 Space.
022A,B	Brown Stone Pattern Peel N Stick Floor Tile	1ST Floor 517 Space Bathroom.
023A,B	Associated Clear Mastic	" " " " "
024A,B	White Square w/ Brown Diamond Peel + Stick Floor Tile	" " " " Kitchen
025A,B	Associated Clear Mastic.	" " " " "
026A,B	Grey Sink Undercoat	" " " " "
019B	Sheetrock	1ST Floor 517 Space Bathroom
020C,D	Joint Compound white	" " " " " , Hall.
027A,B	Interior Window - Caulk on Window	1ST Floor 517 Space Entrance Foyer
028A,B	Interior Window - White Glaze on Window	" " " " " "
029A,B	Fiberboard under Plywood Subfloor	1ST Floor 517 Space Conference Room
030A,B	2x2 Crow Feet Ceiling Tile.	1ST Floor 515 Space
031A,B	2x2 White Squiggle Pattern Ceiling Tile	" " " "
032A,B	2x2 4-Square Rough Finish Ceiling Tile	" " " "
033A,B	2x2 White Sand Finish Ceiling Tile	" " " "
011D,E	Ceiling Plaster	1ST Floor 515 Space.
034A,B	2x2 4-Square Smooth Finish Ceiling Tile.	" " " "
017D,E	Skim Coat Plaster	" " " "
018D,E	Coarse Coat Plaster	" " " "
035A,B	White Floor Tile Under Carpet - Top Layer	1ST Floor 515 Space
036A,B	Associated Yellow Mastic.	" " " "

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Sample ID	Type of Material	Location
037A,B	Grey Floor Tile Under Carpet - Bottom Layer	1ST Floor 515 Space
038A,B	Associated Yellow Mastic.	" " " "
039A,B.	Black Paper Under Tile on Subfloor	" " " "
040A,B	Brown Cove Base	" " " " ,509 Space Reception
041A,B	Associated Yellow Adhesive.	" " " " , " " "
042A,B	Yellow Mastic on Wood Panel	" " " "
020E	Joint Compound	1ST Floor 515 Space
043A,B	Paper Under Hardwood Floor	2ND Floor Floor
044A,B.	Black Sink Undercoat	2ND Floor Units 6, 7 Kitchens.
045A,B.	White Sink Undercoat	2ND Floor Units 2, 3 Kitchens
046A,B.	Black Paper Under Carpet Pad	2ND Floor Common Area.
047A,B.	Associated Yellow Mastic.	" " " "
048A,B.	Floor Leveler Under Carpet	2ND Floor Common Area.
049A,B.	Brown Stone Peel + Stick Floor Tile	2ND Floor Unit 1, Unit 3 Kitchen
050A,B.	Associated Clear Mastic	" " " " "
051A,B	Grey Tile, 2ND Layer	2ND Floor Unit 3 Kitchen
052A,B	Associated Yellow Mastic	" " " "
053A,B	Blue Square Stick on Floor Tile.	2ND Floor Unit 1, Unit 7 Bathrooms
054A,B	Associated Clear Mastic	" " " " "
055A,B	Yellow Pattern Linoleum Under Plywood	2ND Floor Unit 3 Bathroom
056A,B	Orange Sheet Flooring Under Yellow Pattern Linoleum	2ND Floor Unit 3 Bathroom
057A,B	Associated Black Mastic	" " " " "
058A,B	Red Paper under Orange Sheet Flooring, Bottom Layer	" " " " "
059A,B	Wood Pattern Stick on Floor Tile.	2ND Floor Unit 3 Living Room
060A,B	Yellow Mastic Associated w/ 059A,B	" " " " "
061A,B	Grey Square Stick on Floor Tile	2ND Floor Unit 2 Kitchen.
062A,B	Associated Grey Mastic	" " " " "
063A,B	White Square Sheet Flooring	" " " " Bathroom
064A,B	~~Associated~~ Beige Square Sheet Flooring	2ND Floor Unit 4 Kitchen
065A,B	Associated Yellow Mastic	" " " " "

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REC'D UBM 1344 AUG 20 2018
EMSL-BOSTON WI

OrderID: 131805654

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131805654

Sample ID	Type of Material	Location
066A,B	Grey Sheet Flooring	2ND Floor Unit 4 Bathroom
067A,B	Ceramic Wall Tile Grout	2ND Floor Unit 6 Bathroom.
068A,B	" " " Adhesive	" " " "
017F,G	Skim Coat Plaster	2ND Floor Unit 3, Unit C
018F,G.	Coarse Coat Plaster.	" " " " "
069A,B,C,D,E,F,G	Ceiling Texture	2ND Floor Unit 7, 8, 1, 2, 3, 4
070A,B	Grey Exterior Sealant	Exterior Front Displays.
071A,B	White Exterior Window Caulk	Exterior Windows
072A,B	Exterior Grey Door Caulk	Exterior Rear Doors
017F,G	Ceiling Plaster	1ST Floor 509 Space Reception, Prep Area
073A,B	Brown Sheet Flooring	1ST Floor 509 Space X-Ray Room.
020F,G.	Joint Compound	1ST Floor 508 Space Exam 1, Lab.
074A,B	Grey Marble Sheet Flooring, Top Layer	1ST Floor 509 Space Exam 3, Bathroom
075A,B	Associated Yellow Mastic	" " " " " " "
076A,B	Grey Pebble Sheet Flooring, Bottom Layer	" " " " " " "
077A,B	Associated Black Mastic	" " " " " " "
078A,B	Black Cove Base	1ST Floor 509 Space Back Office, Exam 2.
079A,B	Associated Yellow Mastic	" " " " " " "
[redacted] 080A,B	Faux Wood Floor Paneling	1ST Floor 509 Space Reception, Hallway
[redacted] 081A,B	Associated Yellow Mastic	" " " " " "
082A,B	Grey Leveler Under Flooring	" " " " " "
083A,B	9x9 Grey Floor tile	1ST Floor 509 Space Back Foyer, Storage
084A,B	Associated Black Mastic.	" " " " " " "

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REC'D CBM 1344 AUG 20 2018
EMSL-BOSTON WALK IN

ATTACHMENT C

LEAD PAINT LABORATORY REPORT

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (856) 303-2500 / (856) 786-5974
http://www.EMSL.com cinnaminsonleadlab@emsl.com

EMSL Order:	201809646
CustomerID:	EAFI66
CustomerPO:	
ProjectID:	

Attn: **John Vaz**
EFI Global, Inc.
155 West Street, Suite 6
Wilmington, MA 01887

Phone:	(978) 688-3736
Fax:	(978) 688-5494
Received:	08/28/18 10:15 AM
Collected:	8/20/2018

Project: **020.00049 / 509- 517 Moody St. Waltham, MA**

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

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Weight*	*Lead Concentration*
PB001	*201809646-0001*	8/20/2018	8/29/2018	0.2569 g	0.027 % wt
	Site: Basement Side Storage 2 / Grey Paint on Floor				
PB002	*201809646-0002*	8/20/2018	8/29/2018	0.2509 g	0.012 % wt
	Site: Basement Office 4 / Red Paint on Floor				
PB003	*201809646-0003*	8/20/2018	8/29/2018	0.2544 g	0.017 % wt
	Site: Basement Hallway / Yellow Paint on Floor				
PB004	*201809646-0004*	8/20/2018	8/29/2018	0.2566 g	2.2 % wt
	Site: Basement Hall @ Bathrooms / Dark Green Paint on Floor				
PB005	*201809646-0005*	8/20/2018	8/29/2018	0.2589 g	0.017 % wt
	Site: Office 2 Closet- Basement / Light Green Paint on Block				
PB006	*201809646-0006*	8/20/2018	8/29/2018	0.2531 g	<0.0080 % wt
	Site: Basement Hallway / Purple Paint on Sheetrock				
PB007	*201809646-0007*	8/20/2018	8/29/2018	0.2550 g	0.0096 % wt
	Site: Basement Hallway Bathrooms / White Paint on Bricks				
PB008	*201809646-0008*	8/20/2018	8/29/2018	0.2559 g	0.0081 % wt
	Site: 1st Floor 517 Space / White Paint on Sheetrock				
PB009	*201809646-0009*	8/20/2018	8/29/2018	0.2529 g	0.019 % wt
	Site: 1st Floor 515 Space / Lime Green Paint on Sheetrock				
PB010	*201809646-0010*	8/20/2018	8/29/2018	0.2582 g	<0.0080 % wt
	Site: 1st Floor 515 Space / Cream Paint on Sheetrock				
PB011	*201809646-0011*	8/20/2018	8/29/2018	0.2556 g	0.18 % wt
	Site: 1st Floor 515 Space / Green Paint on Wood				
PB012	*201809646-0012*	8/20/2018	8/29/2018	0.2531 g	<0.0080 % wt
	Site: Exterior / Cream paint on Wood Door/Frame				
PB013	*201809646-0013*	8/20/2018	8/29/2018	0.2548 g	0.18 % wt
	Site: Exterior / Tan Paint on Brick				
PB014	*201809646-0014*	8/20/2018	8/29/2018	0.2553 g	<0.0080 % wt
	Site: 509 Space / Blue Paint on Sheetrock				
PB015	*201809646-0015*	8/20/2018	8/29/2018	0.2594 g	<0.0080 % wt
	Site: 509 Space / Pink Paint on Sheetrock/Frames				

Phillip Worby, Lead Laboratory Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NELAP Certifications: NJ 03036, NY 10872, PA 68-00367, AIHA-LAP, LLC ELLAP 100194, A2LA 2845.01

Initial report from 08/30/2018 10:59:36

OrderID: 201809646

201809644

efi global
BOSTON NORTH

131805521

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	John Vaz.	**Bill To:**	Accounts Payable
Company:	EFI Global, Inc.	**Address:**	Same
Address:	155 West Street	**City, State, Zip:**	Same
	Suite 6	**Telephone:**	800-659-1202
City, State, Zip:	Wilmington, MA 01887	**Fax:**	978-688-5494
Project Information			
Project No. and Description:	020.00049 509 - 509 Moody St Waltham MA.		
Email Report to:	Lynda.McDermott@efiglobal.com; Sean.Cassidy@efiglobal.com; Jessica.Rauseo@efiglobal.com		
Alternate (Your Email):	john.vaz@efi.global.com.		

Requested Turnaround Time:

☐ 3hour	☐ 6 hour	☐ 1 day (24hr)	☐ 2 day (48hr)	☐ 3 day (72 hr)	☐ 4 day (96 hr)	☒ 1 week	☐ 2 week

Media and Methodology

Type of Analysis:	Pb Flame AAs.	**Check for Positive Stop:**	☐
Notes:	Please analyze all plaster and joint compound samples.		

	Sample ID	Type of Material	Location
1	PB001	Grey Paint on Floor.	Basement Side Storage 4
2	PB002	Red Paint on Floor	Basement Office 4.
3	PB003	Yellow Paint on Floor	Basement Hallway.
4	PB004	Dark Green Paint on Floor.	Basement Hall e Bathrooms.
5	PB005	Light Green Paint on Block	Office 2 Closet - Basement
6	PB006	Purple Paint on Sheetrock	Basement Hallway.
7	PB007	White Paint on Brick	Basement Hallway Bathrooms.
8	PB008	White Paint on Sheetrock.	1ST Floor 517 Space.
9	PB009.	Lime Green Paint on Sheetrock	1ST Floor 515 Space
10	PB010	Cream Paint on Sheetrock	" " " "
11	PB011	Green Paint on Wood	" " " "

Total Number of Samples Submitted: _____ Date Collected: 8/20/18

Samplers Name: John Vaz Samplers Signature: [signature]

Relinquished By (EFI): Rich Murphy Date: 8/20/18 Time: _____

Received By (Lab): [signature] EMSL Fedex Date: 8/28/18 Time: 1015

REC'D CBM EMSL-BOSTON AUG 20 2018 1343 Walk in

OrderID: 201809646

201809646

efi global 131805521

	Sample ID	Type of Material	Location
12	PB012	Green Paint on Wood Door/Frame	Exterior
13	PB013	Tan Paint on Block.	"
14	PB014	Blue Paint on Sheetrock	50% Spruce
15	PB015	Pink Paint On Sheetrock/Frames.	" "