The City of Waltham

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

<u>ABATEMENT & DEMOLITION of 3 Buildings:</u>
655 Lexington Street (former North Branch Library),
89-91 Maple Street and Baldwin Cottage (former Fernald School)

<u>ZOOM BID OPENING</u>: Thursday March 3rd, 2022 at 10:00AM

<u>Pre-Bid Meeting & Site Inspection</u>: Wednesday February 23rd, 2022 at 10:00AM
(Meet at 89-91 Maple Street Waltham, MA 02453)

<u>Last day for written questions</u>: Friday February 25th, 2022 12:00PM
(email only to cphilpott@city.waltham.ma.us)

Table of Contents

DIVISION 00

SECTION 000200
CITY OF WALTHAM
MASSACHUSETTS

NOTICE TO BIDDERS

ABATEMENT & DEMOLITION of 3 Buildings: 655 Lexington Street (former North Branch Library), 89-91 Maple Street and Baldwin Cottage (former Fernald School)
WALTHAM, MASSACHUSETTS

The City of Waltham, Massachusetts invites sealed bids from Contractors for the **ABATEMENT & DEMOLITION of 3 Buildings: 655 Lexington Street (former North Branch Library), 89-91 Maple Street and Baldwin Cottage (former Fernald School).** The work consists of the abatement, demolition and removal of all components of these 3 buildings. For a more complete description of the project go to the technical specification sections.

PLANS, SPECIFICATIONS and other Contract Documents may be obtained by visiting the City's Web Site at www.city.waltham.ma.us/bids

Copies of Addenda will be e- mailed to the registered Bidders without charge. Addenda will also be posted on the web site above

Sealed **GENERAL BIDS** for this project will be accepted from eligible bidders at the Purchasing Department, Waltham City Hall, 610 Main Street, Waltham, MA 02452 until **Thursday March 3rd, 2022 at 10:00AM,** at which place and time they shall be opened, read aloud via ZOOM and recorded for presentation to the Awarding Authority. See the City's website for meeting info.

A **PRE-BID CONFERENCE AND SITE INSPECTION** will be held for all interested parties on **Wednesday February 23rd, 2022 at 10:00AM,** meet at 89-91 Maple Street. Attendance at this pre-bid conference is strongly recommended but not mandatory for parties submitting a bid. It will be the only opportunity to visit the site prior to the bid opening.

LAST DAY FOR WRITTEN QUESTIONS is Friday February 25th, 2022 at 12:00PM. Questions are to be sent via e-mail only to cphilpott@city.waltham.ma.us

Each general bid shall be accompanied by a bid deposit in the form of a bid bond, certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the City of Waltham in the amount of five percent (5%) of the value of the bid

Bids shall be made on the basis of the Minimum Wage Rates as determined by the Commissioner of Labor and Industries, Pursuant to the Provisions of Chapter 149, Sections 26 to 27D inclusive of Massachusetts General Laws, a copy of which is found in the City's Web site at www.city.waltham.ma.us/bids .

Bidders' selection procedures and contract award shall be in conformity with the rules of Commonwealth of Massachusetts statute Chapter 149 including DCAMM Certfication.

Performance and Labor and Materials payment bonds each in the full amount of the contract price will be required from the successful bidder.

The Awarding Authority reserves the right to reject any or all general bids, if it be in the public interest to do so, and to reject any sub-bid on any sub-trade if it determines that such sub-bid does not represent the sub-bid of a person competent to perform the work as specified or that less than three such sub-bids were received and that the prices are not reasonable for acceptance without further competition.

The successful bidder will be required to furnish a Certificate of Insurance, naming the City of Waltham as an Additional Named Insured with a waiver of subrogation, for General Liability and Vehicle Liability in the amount of $1,000,000 per occurrence and $1,000,000 in the aggregate and Worker's Compensation Insurance as prescribed by law.

In accordance with the laws of the Commonwealth of Massachusetts the undersigned certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by OSHA that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.
All contract made by any department, board or commission where the amount involved is two thousand dollars ($2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars ($5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

CITY OF WALTHAM

Crystal Philpott
Purchasing Agent
City Hall, 610 Main Street
Waltham, MA 02452

SECTION 00 10 00 - INSTRUCTION TO BIDDERS

PART 1 - GENERAL

1.01 SCHEDULE OF DATES

A. Advertisement appears in Central Register, Plans and Specifications ready for Bidders at the Offices of the Waltham Purchasing Agent after 4:30 P.M. on XXXXXXXXXXXXXXX.

B. **Pre-bid walkthrough and site inspection: February 23rd, 2022 at 10:00AM** Meet at **89-91 Maple Street, Waltham, MA.**

C. **Questions** and requests for interpretations may be submitted in writing via e-mail ONLY to cphilpott@city.waltham.ma.us up to **Friday February 25th, 2022 at 12:00PM**

D. Addenda will be issued with interpretations as determined by the Purchasing Department only via e-mail and posting on the web site.

E. **General Bids Deadline**: **Thursday March 3rd, 2022 at 10:00AM i**n the Purchasing Department, City Hall, 610 Main Street, Waltham, MA 02452, Attn: Crystal Philpott, where the bids will be open and read via Zoom. (See our City's website for details)

1.02 BIDDING PROCEDURE

A. Bids for the work are subject to the provisions of General Laws, Chapter 30, § 39M, as amended. Regulations governing the bidding procedures as set forth in the above mentioned amended General Laws must be followed.

B. In the event of any inconsistencies between any of the provisions of these Contract Documents and of the cited statute, anything herein to the contrary notwithstanding, the provisions of the said statute shall control.

C. No General Bid received by the Awarding Authority after the time respectively established herein for the opening of General Bids will be considered, regardless of the cause for the delay in the receipt of any such bid.

1.03 WITHDRAWAL OF BIDS

A. Bids may be withdrawn prior to the time respectively established for the opening of General Bids only on written request to the Awarding Authority.

1.04 INTERPRETATION OF CONTRACT DOCUMENTS

A. No oral interpretation will be made to any bidder. All questions or requests for interpretations must be made in writing to the Architect.

B. Every interpretation made to a bidder will be in the form of an Addendum to the drawings and/or specifications, which will be made available to all persons to whom Contract Documents have been issued.

C. Failure of the Awarding Authority to send or of any bidder to receive any such Addendum shall not relieve any bidder form obligation under his bid as submitted.

D. All such Addenda shall become a part of the Contract Documents.

1.05 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

A. Each bidder may visit the site of the proposed work and fully acquaint himself with conditions as they exist, and may also thoroughly examine the Contract Documents. Failure of any bidder to visit the site and acquaint himself with the Contract Documents shall not relieve any bidder from any obligation with respect to his bid.

B. By submitting a bid, the bidder agrees that the Contract Documents are adequate and that the required result for a full and complete installation can be produced. The successful bidder shall furnish any and all labor, materials, insurance, permits and all other items needed to produce the required result to the satisfaction of the Awarding Authority.

1.06 BID SECURITY

A. The General Contractor's bid must be accompanied by bid security in the amount of five percent (5%) of the bid.

B. At the option of the bidder, the security may be bid bond, certified, treasurer's or cashier's check issued by a responsible bank or trust company. No other type of bid security is acceptable.

Bid Bonds shall be issued by a Surety Company qualified to do business under the laws of the Commonwealth of Massachusetts.

C. Certified, Treasurer's or Cashier's check shall be made payable to the City of Waltham, Massachusetts.

D. The bid security shall secure the execution of the Contract and the furnishing of a Performance and Payment Bond by the successful General Bidder for 100% of the contract value.

E. Should any General Bidder to whom an award is made fail to enter into a contract therefore within five (5) days, Saturdays, Sundays and Legal Holidays, excluded, after notice of award has been mailed to him or fail within such time to furnish a Performance Bond and also a Labor and Materials or Payment Bond as required, the amount so received from such General Bidder through his Bid Bond, Certified,

Treasurer's or Cashier's check as bid deposit shall become the property of the City of Waltham, Massachusetts as liquidated damages; provided that the amount of the bid deposit, which becomes the property of the City of Waltham, Massachusetts, shall not in any event exceed the difference between his bid price and the bid price of the next lowest responsible and eligible bidder; and provided further that, in case of death, disability, bona fide clerical error or mechanical error of a substantial nature, or other unforeseen circumstances affecting the General Bidder, his deposit shall be returned to him.

1.07 BID FORM

A. General Bids shall be submitted on the "FORM FOR GENERAL BID" enclosed. Erasures or other changes must be explained or noted over the signature of the bidder.

B. Bid forms must be completely filled in. Bids which are incomplete, conditional, or obscure, or which contain additions not called for will be rejected.

C. General Bidders shall submit one set of executed bid forms to the Awarding Authority.

1.08 SUBMISSION OF BIDS AND BID SECURITIES

A. Each bid submitted by a General Contractor shall be enclosed in a sealed envelope that shall be placed with the bid security in an outer envelope. The outer envelope shall be sealed and clearly marked as follows:

(Firm Name): _____

General Bid and Bid Security for:
Abatement and Demolition, 3 Buildings

1.09 AWARD OF CONTRACT

A. The Contract shall be awarded to the lowest responsible and eligible General Bidder on the basis of competitive bids in accordance with the procedure set forth in the provision of Chapter 149 of the General Laws of the Commonwealth of Massachusetts.

B. If the bidder selected as the General Contractor fails to perform his agreement to execute a contract in accordance with the terms of his General Bid, and furnish a Performance Bond and also a Labor and Materials or Payment Bond, as stated in his General Bid an award shall be made to the next lowest responsible and eligible bidder.

C. The words "lowest responsible and eligible bidder" shall be the bidder whose name is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work and who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, on the work. Essential information in regard to such qualifications shall be submitted in such form as the Awarding Authority may require.

D. Action on the award will be taken within sixty (60) days, Saturdays, Sundays and Legal Holidays excluded after the opening of the bids.

1.10 SECURITY FOR FAITHFUL PERFORMANCE

A. The successful bidder must deliver to the Awarding Authority simultaneously with his delivery of the executed contract, an executed Performance Bond, and also a Labor and materials or Payment Bond, each issued by a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of One Hundred Percent (100%) of the Contract Price, as surety for the faithful performance of his contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. Said bonds shall provide that, if the General Contractor fails or refuses to complete the Contract, the Surety Company will be obligated to do so.

B. Premiums are to be paid by the General Contractor, and are to be included in the Contract Price.

1.11 EQUAL OPPORTUNITY

A. The City of Waltham is an Equal Opportunity employer and will require compliance with the minority business enterprise plan (MBE) on file in the Purchasing Department

1.12 PRE-BID WALK-THRU

A. A pre-bid conference will be held at the site on **Wednesday February 23rd, 2022 at 10:00AM, meet at 89-91 Maple St Waltham, MA**. Interested parties are encouraged to attend given that this will be the only time the site is available prior to the submission of bids. Further, prior to the bid opening, potential bidders may not go onto the site any time other than the aforementioned pre-bid conference.

1.13 SITE VISITS

A. Prospective bidders are prohibited from going onto the site prior to the Bid Opening or any time other than the pre-bid walk-thru, as set forth in Section 1.12 above, unless authorized by the Architect in an Addendum to the bid documents.

1.14 CONTRACT DOCUMENTS

A. The Awarding Authority shall make available the bid documents and addenda in the City Web site at www.city.waltham.ma.us/bids. No plans will be mailed.

1.15 EQUALITY

A. Except where otherwise specifically provided to the contrary, the words "or approved equal" are hereby inserted immediately following the name or description of each article, assembly, system, or any component part thereof in the Contract Documents. It is the Contractor's responsibility to provide all the research and documentation that would prove a product or assembly is "equal". Failure to provide research or documentation does not alleviate the Contractor's responsibility to meet the schedule.

1.16 TAX FREE NUMBER

A. The City of Waltham has a tax-free number.

1.17 SCHEDULE

A. The work of the Contract shall be **Substantially** Complete in **105 calendar days** after the date of the Notice-to-Proceed**. Final** completion is to be achieved **120 calendar days** after the date of the Notice-to-Proceed.

1.18 GENERAL CONDITIONS CHARGES.

General Condition charged to the Payment application for AIA 702 shall be spread over a period of 4 months or 4 Payment application cycles whichever is later

1.19 WEEKLY JOB MEETINGS

A. There will be a weekly job meeting at the site on the same agreed-upon day and time. Time will be provided to discuss and view the progress of the work and to answer questions. The Contractor's job Superintendent and Project Manager shall attend each meeting. The City reserves the right to have job meetings conducted in the location of its choosing.

1.20 PROJECT SUPERINTENDENT

A. The Contractor shall provide the same person as Superintendent for the entire duration of the project. Failure to maintain the same person in this position shall result in a One Thousand Dollar ($1,000.00) penalty per incident which shall cover the Architect's time to re-orient new personnel.

1.21 AWARD

A. The Awarding Authority reserves the right to reject any or all bids if it be in the public interest to do so, and to act upon the bids and make its award in any lawful manner.

1.22 PREVAILING WAGE SCHEDULE

A. Bids shall be made on the basis of the Prevailing Wage Schedule, as determined by the Federal Government and the Commissioner of Labor and Industries, pursuant to the provision of the Massachusetts General Laws. The Prevailing Wage Schedules for this project can be found in the City's web Site at www.city.waltham.ma.us/bids

1.23 CONFLICT OF INTEREST

A. A bidder filing a proposal thereby certifies that the proposal is made in good faith, without fraud, collusion, or connection of any kind with any other bidder for the same work, and that the bidder is competing solely on its own behalf without connection with, or obligation to, any undisclosed person or firm.

1.24 PROCEED ORDERS

A. No bidder is to proceed without a proceed order as set out in the contract.

1.25 INTENTIONALLY LEFT BLANK

1.26 COMPLIANCE WITH MASSACHUSETTS GENERAL LAWS

A. Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A, I certify under the penalty of perjury that I, to the best of my knowledge and belief have filed all state tax returns and paid all the state taxes required under law.

1.27 CONSTRUCTION BARRICADES

A. The General Contractor shall provide all barricades to enclose the work area to prevent unauthorized access to the site.

1. The barricades shall provide enough room for all construction activities to be performed while separated from pedestrians, students, and staff on site.

2. Safety is the sole responsibility of the Contractor and any barricades necessary to protect the work and the public shall be provided.

3. Provide entrance protection.

1.28 INSURANCE

A. The contractor shall purchase and maintain, at his expense all insurance required by the Contract. Documents and all insurance required by the applicable laws of Massachusetts, including but not limited to, General Laws, Chapter 146, in connection with all hoisting equipment.

B. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death and all property damage including, without limitation, damage to buildings and adjoining the site of construction which might arise from and during operations under this contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them including:

1. Statutory Worker's Compensation and Employer's Liability

   The contractor shall provide insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws (so-called Worker's Compensation Act) to all persons to be employed under this contract and shall continue in force such insurance as aforesaid shall be deemed a material breach of this Contract and shall operate as an immediate termination thereof. The contractor shall, without limiting the generality of the foregoing, conform to the provisions of Section 34A of Chapter 149 of the General Laws, which Section is incorporated herein by reference and made a part of hereof.

2. Comprehensive General Liability Insurance

   Minimum bodily injury limits of $ 1,000,000 per person and $ 1,000,000 per accident, and property damage limits of $ 500,000 per accident and $ 1,000,000 aggregate during any 12 month period, shall include the following:

   a. Public liability (bodily injury and property damage)
   b. X.C.U. (explosion, collapse, and underground utilities)
   c. Independent contractor's protective liability.
   d. Products and completed operations.
   e. Save harmless agreement for Owner and Architects set forth in ARTICLE 10.11 of the GENERAL CONDITIONS.

3. Comprehensive All Risk Motor Vehicle Liability Insurance

   Minimum bodily injury limits of $ 500,000 per person, $ 1,000,000 per accident, and property damage limit of $ 1,000,000 per accident.

4. All Risk Insurance

   Covering all Contractors' equipment with a provision for Waiver of Subrogation against the Owner.

5. Excess Liability Insurance in Umbrella Form with combined Bodily Injury and Property Damage Limit of $ 1,000,000.

6. **City of Waltham shall be a Named Additional Insured for General Liability only with a Waiver of Subrogation on the insurance policy for this project.**

1.29 SITE ACCESS

A. The General Contractor shall gain access to the site via routes approved by the Owner.

1. The General Contractor as part of the bid price will restore all roads, curbs, driveways, walks and grassed or landscaped areas damaged during construction.

1.30 CONSTRUCTION TRAILER

A. The General Contractor shall locate the construction trailer at locations approved by the Owner.

B. The General Contractor shall locate all on site stored or staged materials within the enclosed area designated by the Owner.

1.31 INTENTIONALLY LEFT BLANK

1.32 COMPLETE BID FORMS

A. Please Note: Each bidder must fill in all the blanks on all the bid forms, even if the information is "zero dollars" or "not applicable". Also, please acknowledge all Addenda issued by the Awarding Authority

2.00 FUNDS APPROPRIATION and LOAN AUTHORIZATION**.**

A THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND AUTHORIZATION BY THE MAYOR.

3.0 CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

A All contract made by any department, board or commission where the amount involved is two thousand dollars ($2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars ($5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor

Signature of Individual or Corporate Name

By:

_____

(Signature of Corporate Officer if applicable)

Title:_____

Social Security Number or Federal Identification Number: _____

END OF SECTION

SECTION 00 31 00 FORM FOR GENERAL BID

ABATEMENT & DEMOLITION of 3 Buildings: 655 Lexington Street (former North Branch Library), 89-91 Maple Street and Baldwin Cottage (former Fernald School)

Virtual Bid Opening Date: Thursday March 3rd, 2021 at 10:00AM

Crystal Philpott, Purchasing Agent
City of Waltham
610 Main Street
Waltham, MA 02452

A. Basic Price

The undersigned:_____
(Please type or print the business name of the bidding firm)
having visited the site of the above project and having familiarized myself with the local conditions affecting the cost of the work and with the contract documents, including Amendments and Addenda No's. ____,____,____,____,_____ hereby proposes to furnish all labor (including Sub Bids), materials, tools, equipment, insurance, permits and taxes, and to do and lawfully perform all things as provided in the specifications, all in accordance with the contract documents, for the sum of:

1) 655 Lexington Street
TOTAL Base Bid (in words) _____ **Dollars, $**_____

2) 89-91 Maple Street
TOTAL Base Bid (in words) _____ **Dollars, $**_____

3) Baldwin Cottage
TOTAL Base Bid (in words) _____ **Dollars, $**_____

GRAND TOTAL (Combined, Both Sites, 1-3)

(in words) _____ **Dollars, $** _____

The Bidder further attest that the above prices are all **Inclusive and Fixed prices**

B. Left Blank Intentionally

C. The undersigned agrees that, if s/he is selected as General Contractor, s/he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Awarding Authority, execute a contract in accordance with the terms of this bid and furnish a performance

bond and also a labor and materials or payment bond, each issued by a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of the contract price, the premiums for which are to be paid by the General Contractor and are included in the contract price.

D. The undersigned certifies that s/he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work and that s/he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A.

E. The undersigned as Bidder certifies that if this proposal is accepted, s/he will furnish to the City of Waltham with the invoice for the material or equipment supplied two copies of any and all Material Safety Data Sheets applicable to such material or equipment, as required by M.G.L. Chapter 111F, so called "Right to Know Law".

F. The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. The word "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

G. Substantial Completion

The work of the Contract shall be Substantially Completed in **(105) calendar days not including winter or weather shut-downs**.

H. In accordance with M.G.L., the undersigned certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by OSHA that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

Sincerely,

_____
(Bidder)

_____
(Address of Bidder)

By: _____
(Title - Owner*, Partner*)

(Seal, if Corporation)

By: _____
(If Corporation - Name and Office)

* If the business owned by the individual or partnership is conducted under a trade or assumed name, a certified copy of doing business under an assumed name should be annexed.

SECTION 00 33 1 0

PREVAILING WAGE SCHEDULE

Please visit the City Web Site at www.city.waltham.ma.us/bids for a copy of the schedules

SECTION 00 50 00

AGREEMENT

CITY OF WALTHAM

ARTICLE 1. This agreement, made this _____ day of _____, 2022 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, 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 by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from 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 thereof, 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.

The Completion time for this project shall be **120 Days from Notice to Proceed.**

CITY OF WALTHAM, MASSACHUSETTS

FOR THE CITY

_____
Jeannette A. McCarthy, MAYOR,
City of Waltham
Date: _____

_____
Luke Stanton, Asst. City Solicitor
Date: _____
APPROVED AS TO FORM ONLY

_____
William Forte, Building Inspector
Date: _____

_____
Crystal Philpott, Purchasing Agent
Date: _____

_____
Paul Centofanti, Auditor
Date: _____

I CERTIFY THAT SUFFICIENT FUNDS
ARE AVAILABLE FOR THIS CONTRACT

FOR THE COMPANY

_____
CONTRACTOR (Signature),
Date: _____

_____
Company

_____
Address

_____
Robert Waters, Housing Director
Date: _____

_____
Chief Tom MacInnis, Fire Chief
Date:_____

_____
John Pinzone, School Facilities Mgr
Date:_____

SECTION 00 50 10

PERFORMANCE BOND

CITY OF WALTHAM

KNOW ALL MEN BY THESE PRESENT THAT,
_____ as

principal and _____ as surety, are held and firmly bound unto the CITY OF WALTHAM and to such persons, firms, and corporations, who may furnish materials for or perform labor on the work, construction or improvements contemplated in the Contract hereinafter mentioned, or who may have any suits or claims for injury or damage to persons or property resulting from or arising out of the work done under this Contract, in the

SUM OF _____DOLLARS ($_____)
(lawful money of the United States of America) for the payment whereof the Contractor and the Surety of Sureties bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT for the above burden (the Contractor) its

_____

heirs, executors, administrators and assigns, shall faithfully perform the Contract, on his part and during the life of any guaranty or warranty, for defective materials and workmanship required under this Contract, and satisfy all claims and demands incurred for the same; and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of failure so to do, and shall fully reimburse and repay the City all outlay and expense which the City may incur in making good any such default, and shall promptly make payment to all persons supplying labor or materials for use in the prosecution of the work provided for in said Contract; and shall indemnify and save harmless the said City, its officers and agents from any and all suits or claims for injury or damage to persons or property resulting from or arising our of the work done under this Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that (except as to the City) no suit, action or proceeding by reason of any default whatever shall be brought on this Bond after two years from the day on which the final payment under the Contract falls due.

AND PROVIDED, that any alterations which may be made in the terms of the Contract or in the work to be done under it, or any assignment, transfer or subletting of any part of the work, or the giving by the City of any extension of time for the performance of the Contract, or any other forbearance on the part of either the City or the Contractor to the other, shall not in any way release the Contractor and the Surety of Sureties, or either or any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety or Sureties of any such alterations, assignment, transfer, subletting extension or forbearance being hereby waived.

This Bond is made for the use and benefit of all persons, firms, and corporations who may furnish materials, or perform any labor for or on account of said work, construction or improvements, or who may have any suits or claims for injury or damage to persons or property resulting from or arising our of the work done under this Contract, and they and each of them are hereby made obligees hereunder the same as if their own proper names were written herein as such, and they and each of them may sue hereon in their own names for their own use and benefit.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed hereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this Bond, and it does hereby waive notice of any such changes, extension of time, alteration or addition to the terms of the Contract or to the work, or to the Specifications.

IN WITNESS WHEREOF, said Contractor and Surety have hereunto set their respective names this

_____ day of _____, 20_____.

WITNESSES:

(CONTRACTOR) (SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____
(SURETY) (SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____ BY _____
(ATTORNEY-IN-FACT)

POWER OF ATTORNEY
Attorneys-in-fact who sign bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

SECTION 00 50 20

PAYMENT BOND

CITY OF WALTHAM

KNOW ALL MEN BY THESE PRESENT THAT,
_____ as

principal and _____ as surety, are held and firmly bound unto the CITY OF WALTHAM and to such persons, firms, and corporations, who may furnish materials for or perform labor on the work, construction or improvements contemplated in the Contract hereinafter mentioned, or who may have any suits or claims for injury or damage to persons or property resulting from or arising out of the work done under this Contract, in the

SUM OF _____DOLLARS ($_____)
(lawful money of the United States of America) for the payment whereof the Contractor and the Surety of Sureties bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT for the above burden (the Contractor) its

_____
heirs, executors, administrators and assigns, shall faithfully perform the Contract, on his part and during the life of any guaranty or warranty, for defective materials and workmanship required under this Contract, and satisfy all claims and demands incurred for the same; and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of failure so to do, and shall fully reimburse and repay the City all outlay and expense which the City may incur in making good any such default, and shall promptly make payment to all persons supplying labor or materials for use in the prosecution of the work provided for in said Contract; and shall indemnify and save harmless the said City, its officers and agents from any and all suits or claims for injury or damage to persons or property resulting from or arising our of the work done under this Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that (except as to the City) no suit, action or proceeding by reason of any default whatever shall be brought on this Bond after two years from the day on which the final payment under the Contract falls due.

AND PROVIDED, that any alterations which may be made in the terms of the Contract or in the work to be done under it, or any assignment, transfer or subletting of any part of the work, or the giving by the City of any extension of time for the payment of the Contract, or any other forbearance on the part of either the City or the Contractor to the other, shall not in any way release the Contractor and the Surety of Sureties, or either or any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety or Sureties of any such alterations, assignment, transfer, subletting extension or forbearance being hereby waived.

This Bond is made for the use and benefit of all persons, firms, and corporations who may furnish materials, or perform any labor for or on account of said work, construction or improvements, or who

may have any suits or claims for injury or damage to persons or property resulting from or arising our of the work done under this Contract, and they and each of them are hereby made obligees hereunder the same as if their own proper names were written herein as such, and they and each of them may sue hereon in their own names for their own use and benefit.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed hereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this Bond, and it does hereby waive notice of any such changes, extension of time, alteration or addition to the terms of the Contract or to the work, or to the Specifications.

IN WITNESS WHEREOF, said Contractor and Surety have hereunto set their respective names this

_____ day of _____, 20_____.

WITNESSES:

(CONTRACTOR) (SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____
(SURETY) (SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____ BY _____
(ATTORNEY-IN-FACT)

POWER OF ATTORNEY
Attorneys-in-fact who sign bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

SECTION 005030

GENERAL CONDITIONS

1. **INFORMATION**
   All information shall come from the Office of the City Purchasing Agent. The Contractor shall inquire at this office for any information needed. Wherever the words "or equal as approved" are used, it is to be understood that the opinion of the City Purchasing Agent shall govern.
2. **SUITS**
   The Contractor shall assume defense of and shall indemnify and hold the City and its agents harmless from all suits and claims against the City and its sub-contractors arising from the use of any invention, patent right labor or employment, or from any act of omission or neglect of the City, its agents, employees or any subcontractor in performing the work, under this contract.
3. **LAWS AND REGULATIONS**
   The Contractor shall conform to all the applicable rules, regulations, laws and ordinances of the City of Waltham, the Commonwealth of Massachusetts, the United States of America and all agencies having jurisdiction over this contract.
4. **PROTECTION OF PROPERTY**
   The Contractor shall take all proper precautions to protect the City's property from damage and unnecessary inconvenience. Any City property damaged by the Contractor in carrying out the provisions of this contract shall be restored to its original condition, by and at the expense of the Contractor.
5. **PROTECTION OF PERSONS**
   The Contractor shall take all proper precautions to protect persons from injury, unnecessary inconvenience, and shall be responsible for his failure to do so. The Contractor agrees to hold the City harmless from any and all liabilities of every nature and description, which may be suffered through bodily injury, including death, to any person, by reason of negligence of the Contractor, his agents or employees, or any subcontractor.
6. **INSURANCE**

   A. WORKMAN'S COMPENSATION: The Contractor shall provide by insurance for the payment of compensation and furnishing of other benefits under Chapter 152 of the General Laws of the Commonwealth of Massachusetts to all persons to be employed under this contract, the premiums for which shall be paid by the Contractor.

   B. COMPREHENSIVE GENERAL LIABILITY

Bodily Injury:	$1,000,000 Each Occurrence
	$2,000,000 Aggregate
Property Damage:	$1,000,000 Each Occurrence
	$2,000,000 Aggregate

   C. AUTOMOBILE (VEHICLE) LIABILITY

Bodily Injury	$2,000,000 Each Occurrence
Property Damage	$1,000,000 Aggregate

   D. UMBRELLA POLICY

General liability	$2,000,000

   Your bid response must include a Certificate of Insurance with the above limits as a minimum. In addition, the Certificate of Insurance must have the following text contained in the bottom left box of the Certificate: **"The City of Waltham is a Named Additional Insured for all Insurance".** The Certificate of Insurance must be mailed directly to:

Office of the Purchasing Agent
Purchasing Department
City of Waltham
610 Main Street
Waltham, MA 02452

7. **LABOR AND MATERIALS BOND**
The Contractor agrees to execute and deliver to the City, a Performance Bond and a Labor and Materials Bond equal to 50% of the contract value. This contract shall not be in force until said bond has been delivered and accepted by the City. Bond to be issued by a company licensed by the Commonwealth of Massachusetts.

8. **PERSONNEL**:
The Contractor shall employ a competent supervisor and all properly licensed personnel necessary to perform the services required in this contract. The City Purchasing Agent shall have the right to require the Contractor to remove and/or replace any of the personnel for nonperformance or for unprofessional behavior. The City Purchasing Agent may require the Contractor to submit a weekly performance record of the areas and of the work performed, on forms approved by the City Purchasing Agent. The Contractor or his supervisor shall be available to inspect such work as required by the City Purchasing Agent.

9. **PREVAILING WAGES**
The Contractor is required to pay the prevailing wages as determined by the Federal Government and by Chapter 149, Sections 26 and 27D of the Massachusetts General Laws, including the submission of weekly payrolls to the awarding authority. Copies of the Prevailing Wage Schedule is found on line at www.city.waltham.ma.us/bids

10. **MATERIALS**
The City or its Agent reserves the right to approve or reject any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any rejected supplies, materials or equipment, to the satisfaction of the City or its Agents.

11. **TERMINATION OF CONTRACT**
This contract may be terminated by the City upon deliverance to the Contractor of a five-day written notice of said termination.

12. **CONTRACT OBLIGATIONS**
Contract obligations on behalf of the City are subject to an annual appropriation to cover the contract obligation and shall be in force until the date of Final acceptance excluding any guarantee period.

13. **BIDDER EXPERIENCE EVALUATION**
Each bidder shall submit with his bid, all the information relative to their experience and qualifications in performing the work required under this contract and shall have been in business for a minimum of five (5) years, in order for their bid to be considered.

14. **NOT-TO-EXCEED AMOUNT**
The bid amount proposed in your company's response is a "not-to- Exceed" amount unless the City makes changes, in writing, to the scope of work to be performed. The Change Order must be signed and approved by the City's Purchasing Agent, City Auditor, Law Department and the Mayor prior to the commencement of the change order work. No work is to begin until the proper approvals have been obtained. A change order will be priced at the unit price. Failure to comply with this procedure will result in the cancellation of the contract and the non-payment of services provided.

16. FINANCIAL STATEMENTS.

The City may require, within five (5) days after the bid opening, a complete and detailed Financial Statement prepared by a Certified Public Account, to determine a bidder's financial stability.

17 BREACH OF CONTRACT/ NON PERFORMANCE

If the Contractor shall provide services in a manner, which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services, which are satisfactory to the City, the City in the alternative may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract for nonperformance of services together with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor. If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand. The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including a state of war, embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the City in writing of such cause within seven (7) days after its occurrence.

18 RIGHT TO AUDIT

The City of Waltham has the right to review and audit documents related to this contract. This right extends to any subcontractor, supplier or other entity used by the prime contractor to fulfill the obligations under this contract.

19. CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars ($2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars ($5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

20. BID OPENING INCLEMENT WEATHER

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

21 FUNDS APPROPRIATION.

THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND AUTHORIZATION BY THE MAYOR.

22 THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS, OR ANY PART OF ANY BID, WHICH IN THE OPINION OF THE AWARDING AUTHORITY, IS IN THE BEST INTERESTS OF THE CITY OF WALTHAM.

End of Section 00 50 30

Section 00 50 40

Compliance

The documents in this section shall bear "wet" Original signatures and returned with your bid

Compliance

The compliance documents in this section must be completed, signed and returned **with your bid package**.

Purchasing Department

City of Waltham
610 Main Street
Waltham, MA 02452

Failure to submit the completed documents will cause the disqualification of the proposal.

Section Index

Check when Complete

- Non-collusion form and Tax Compliance form…… _____
- Corporation Identification Form…….. _____
- Certificate of Vote Authorization…….. _____
- Certificate of Insurance (showing all limits of WC &GL)..... _____
- Three (3) References…… _____
- 5% Bid Bond or Certified Check>..... _____
- Debarment Certificate …….. _____
- Prevailing Wage Certificate……. _____
- Right-to-know Law…… _____
- OSHA 10 Certificate for all Assigned Employees (MGL ch30, §39M and Ch 149) _____
- DCAMM Certification..... _____

Before the commencement of the Job, the contractor must provide to the above office:

- Performance and Payment Bonds **each** for 100% of the contract value and naming the City of Waltham

Your Company's Name: _____

Service or Product Bid_____

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.

Wet Signature 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)

Wet Signature Required

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.

Wet Signature Required

CERTIFICATE OF VOTE OF 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

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 their free act and deed before me,_____

Notary Public;

My Commission expires: _____

Wet Signature Required

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)
_____
State Telephone Number Today's Date

PROVIDE THREE (3) SERVICE APPROPRIATE REFERENCES

1. Company Name:
   Address:
   Contact Name:
   Phone #
   Type of service/product provided to this Company:

   Dollar value of service provided to this Company:

2. Company Name:
   Address:
   Contact Name:
   Phone #
   Type of service/product provided to this Company:

   Dollar value of service provided to this Company:

3. Company Name:
   Address:
   Contact Name:
   Phone #
   Type of service/product provided to this Company:

   Dollar value of service provided to this Company:

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.

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 has been printed on the reverse of this page 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.

In addition, every contractor and subcontractor is required to submit, on a weekly basis, a copy of his or her weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those reports for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work, a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

_____

STATEMENT OF COMPLIANCE

_____, 200____

I_____, _____
(Name of signatory party) (Title)

I 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 _____

Print_____

WEEKLY PAYROLL REPORT FORM

Company Name: _____

Project Name: _____

Awarding Auth.: _____

Work Week Ending: _____

☐ Final Report

☐ Prime Contractor

☐ Subcontractor
List Prime Contractor: _____

Employer Signature: _____

Print Name & Title: _____

Employee Name & Address	Work Classification	Hours Worked							(A) Tot. Hrs.	(B) Hourly Base Wage	Employer Contributions			(F) [B+C+D+E] Hourly Total Wage (prev. wage)	(G) [A*F] Weekly Total Amount
		S	M	T	W	T	F	S			(C) Health & Welfare	(D) Pension	(E) Supp. Unemp.		

NOTE: Every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority.

Wet Signature Required

RIGHT TO KNOW LAW

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L. c. 111F, §§8,9 and 10 and the regulations contained in 441 CMR 21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. c. 111F §7 and regulations contained in 441 CMR 21.05. Failure to furnish MSDS and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the vendor from selling said substances, or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 111F or M.G.L. are cautioned to obtain and read the laws, rules and regulations referenced above. Copies may be obtained from the State House Bookstore, Secretary of State, State House, Room 117, Boston, MA (617) 727-2834.

Authorized Signature Indicating Compliance with the Right-to-know laws:

Signature **Date**

Print Name

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.

Wet Signature Required

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 _____

Signed by Authorized Company Representative:

_____

Print name _____,

Date _____

Wet Signature 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 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.

SECTION 008210

PERMITS

PART 1 GENERAL

1.01 CONTRACT DOCUMENTS

A. The general provisions of the Contract, including General and Supplemental Conditions and General Requirements, apply to the work specified in this section.

1.02 PERMITS

A. The Contractor shall be responsible for obtaining and complying with all permits required of his equipment, work force, or particular operations (such as blasting and fuel storage permits, etc.) in the performance of the Contract. All costs associated with obtaining permits will be included in the price of the work.

B. If included as part of this project, The Contractor shall be responsible for complying with requirements of the Local Conservation Commission and the Cambridge Watershed Protection District. All costs associated with complying with the conditions will be included in the price of the work.

C. The Contractor shall be responsible for obtaining and complying with the requirements of the Street Opening and Trench Permits required by the City Department of Public Works in the performance of the Contract. All costs associated with complying with the conditions of the permits will be included in the price of the work. All costs associated with obtaining permits will be waived by the City.

END OF SECTION

SECTION 00 90 00

ORDER OF CONDITIONS

PART I - GENERAL

1.01 SUMMARY

A. The work of this project lies within the 200-foot buffer zone of Bordering Vegetated Wetlands both of which are under the jurisdiction of the Waltham Conservation Commission and the Massachusetts Department of Environmental Protection. The Waltham Conservation Commission has issued a Negative Determination of Applicability with Conditions of Negative Determination, which conditions the work of this project, a copy of which is included as Appendix A, and is a Special Condition of the Contract,

1. The Contractor shall be responsible for reading the Conditions of Negative Determination and being familiar with each and every condition which has been set forth.

2. The Contractor shall contact the Waltham Conservation Commission (781- 314-3845) after erosion controls, signage, and other required elements are in place, to arrange for a site inspection by the Conservation Commission, prior to any excavation or other construction activities.

3. The Contractor shall be responsible for satisfying the provisions of the Conditions of Negative Determination including but not limited to the following:

   (a) Robust erosion controls will be installed to include silt socks and a silt fence at the edge of the site.
   (b) The applicant will be permitted to install native saplings provided they do not interfere with sight lines at the intersection
   (c) The Cellar hole and any other excavation will be completely backfilled with clean fill.
   (d) At the conclusion of work, the site will match existing grades and not add to erosion.

4. The Conditions of Negative Determination is included as part of the Contract Documents, in Appendix A.

END OF SECTION

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. **"Owner"**: Refers to the property owner, City of Waltham, 610 Main Street, Waltham, Massachusetts 02452. Crystal Philpott, Purchasing Agent. Telephone: 781-314-3240.

2. **"Designer or Environmental Consultant"**: For Bidding Questions- refers to EFI Global, Inc., 155 West Street, Suite 6, Wilmington, Massachusetts 01887, Rich Murphy- Telephone: 339-227-2467 *A designated authorized representative of the owner for the purpose of inspecting, monitoring and testing to be determined after award.

3. **"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.

4. **"Subcontractor"**: Refers to any contractor who is working under the direct supervision of the Contractor including but not limited to asbestos and hazardous materials 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 the North Branch Library at 655 Lex Street, 89-91 MAple Street and the Baldwin Cottage respectively, 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 asbestos abatement, miscellaneous hazardous materials removal and disposal, and building 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 Health and Safety Plan and project schedule.

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 Consultant.

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

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

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

11. Asbestos-containing debris is present throughout the North Branch Library. 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.

12. Complete removal and disposal of the North Branch Library, 89-91 Maple St and Baldwin cottage building structures, foundations, footings, as outlined in these Specifications.
13. Excavation, site clearing, and site work as outlined in these Specifications.
14. 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. Power is currently unavailable 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.

B. Domestic water is not available within the buildings. 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.

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.

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. Building Demolition;

5. Site work;

6. Demobilization.

C. The Contractor shall submit a construction schedule to the City of Waltham and Consultant 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 Consultant. 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 Consultant 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 Consultant, 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 Consultant, 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 Consulant 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 Consultant 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 Consultant 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.

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. Consulant

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 Consultant.

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 Consultant.

F. Minutes of the project meetings shall be prepared by the Consultant and shall be distributed to all present. The Consultant'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 Consultant, the City of Waltham or his/her designated representative, and such Authority timely notice (5 business days minimum) of its readiness so the Consultant 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 Consultant 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 Consultant.

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 Consultant promptly upon their receipt.

2. The Contractor shall arrange for all inspections, testing and approvals required for all permits, and shall notify the Consultant 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 Consultant 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 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 Consultant 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.

1.18 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- DEMOLITION 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 Consultant 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 Consultant. 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.

1.19 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.

1.20 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.

1.21 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.

1.22 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.

1.23 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 Consultant 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.

1.24 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 Consultant. These shall be supplied and maintained at no cost to the City of Waltham and the Consultant, 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

ASBESTOS ABATEMENT SPECIFICATIONS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

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

B. For the purpose of this Section, the following definitions apply:
"Site" shall refer to 89-91 Maple Street, Baldwin Cottage, and North Branch Library, located in Waltham, MA.
"Contractor" shall refer to the Asbestos Abatement Contractor.
"Owner" shall refer to the City of Waltham
"Consultant" For Bidding Questions- refers to EFI Global, Inc. *A designated authorized representative of the owner for the purpose of inspecting, monitoring and testing to be determined after award.*
"ACM" shall refer to Asbestos-Containing Material.
"ACWM" shall refer to Asbestos-Containing Waste Material.

1.02 RELATED REQUIREMENTS

A. Examine all other specification sections for requirements affecting the work of this Section whether or not such work is specifically mentioned in this Section.

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

1.03 DESCRIPTION OF WORK

A. PROJECT DESCRIPTION

The Contractor shall furnish all labor, materials, equipment, and services for the legal removal and disposal of all specified asbestos-containing materials (ACM) and associated asbestos-containing waste materials (ACWM), as outlined in the specifications.

1. The project involves the removal of various types of ACM from interior and exterior locations at the site buildings, including selective demolition to access materials for removal. The Contractor is responsible for proper removal and disposal of all ACM listed below in the Summary of Work Tables:

Table 1: Base Bid Summary of Work for Asbestos Abatement
89-91 Maple Street
Waltham, Massachusetts

Material Description/Methods	Material Location(s)	Estimated Quantity
Remove and properly dispose of flue packing cement in full negative pressure containment with attached 3-stage decontamination unit.	Basement chimney	3 SF

Table 1: Base Bid Summary of Work for Asbestos Abatement 89-91 Maple Street Waltham, Massachusetts		
Material Description/Methods	**Material Location(s)**	**Estimated Quantity**
Remove and properly dispose of existing pipe insulation and clean/decontaminate areas where residual pipe fitting insulation remains on piping in full negative pressure containment with attached 3-stage decontamination unit. Alternatively, glovebags may be used for removal of existing insulation, in accordance with MassDEP 310 CMR 7.15(9) and MassDLS 454 CMR 28.10(5).	Throughout basement	10 LF 15 Fittings
Remove and properly dispose of black caulk at roof edge in accordance with asphaltic roofing removal requirements noted in MassDEP 310 CMR 7.15(10) and MassDLS 454 CMR 28.12(2).	Rear roof at wall junction	40 LF
Remove and properly dispose of cement shingle siding including any debris on ground surface?? in accordance with MassDEP 310 CMR 7.15(1) and MassDLS 454 CMR 28.12(2).	Exterior of building	4,500 SF
Remove and properly dispose of tan exterior window glazing compound under disturbance of glazing and/or caulk compound noted in MassDEP 310 CMR 7.15(11).	Exterior windows of building	36 windows
Remove and properly dispose of tan exterior door trim caulk in full negative pressure containment with attached 3-stage decontamination unit.	Exterior doors of building	2 Units

SF – square feet LF – linear feet

Table 2: Base Bid Summary of Work for Asbestos Abatement Baldwin Cottage – 338 Trapelo Road Waltham, Massachusetts		
Material Description/Methods	**Material Location(s)**	**Estimated Quantity**
Remove and properly dispose of white sink coating in full negative pressure containment with attached 3-stage decontamination unit.	1st floor art supply room	1 sink
Remove and properly dispose of pipe insulation in full negative pressure containment with attached 3-stage decontamination unit. Alternatively, glovebags may be used in accordance with MassDEP 310 CMR 7.15(9) and MassDLS 454 CMR 28.10(5).	Basement	30 LF

Table 2: Base Bid Summary of Work for Asbestos Abatement Baldwin Cottage – 338 Trapelo Road Waltham, Massachusetts		
Material Description/Methods	**Material Location(s)**	**Estimated Quantity**
Boiler – Perform selective demolition to access internal components for inspection and sampling by the Consultant. If determined to be ACM, perform complete demolition and disposal of boiler and associated piping in full negative pressure containment with attached 3-stage decontamination unit.	Basement Boiler Room	1 Unit

SF – square feet LF – linear feet

Table 3: Base Bid Summary of Work for Asbestos Abatement North Branch Library – 655 Lexington Street Waltham, Massachusetts		
Material Description/Methods	**Material Location(s)**	**Estimated Quantity**
Remove and properly dispose of 12" x 12" gray with colored flecks floor tile and associated mastic in full negative pressure containment with attached 3-stage decontamination unit.	Throughout 1st floor, stairwell, entrance foyer	1,800 SF
Remove and properly dispose of ceiling texture and contaminated plaster in full negative pressure containment with attached 3-stage decontamination unit. Work includes removal and decontamination of all light fixtures.	Throughout 1st floor and basement	3,600 SF
Remove and properly dispose of pipe insulation in full negative pressure containment with attached 3-stage decontamination unit. Alternatively, glovebags may be used in accordance with MassDEP 310 CMR 7.15(9) and MassDLS 454 CMR 28.10(5).	Throughout building	50 Each
Remove and properly dispose of vibration cloth on furnace in full negative pressure containment with attached 3-stage decontamination unit.	Basement boiler room	5 SF
Remove and properly dispose of residual exterior gray window caulk compound under window glazing removal requirements noted in MassDEP 310 CMR 7.15(11).	Exterior windows	56 Windows
Remove and properly dispose of white window glazing under disturbance of glazing and/or caulk compound requirements noted in MassDEP 310 CMR 7.15(11).	Exterior windows	56 Windows

Table 3: Base Bid Summary of Work for Asbestos Abatement North Branch Library – 655 Lexington Street Waltham, Massachusetts		
Material Description/Methods	**Material Location(s)**	**Estimated Quantity**
Remove and properly dispose of exterior gray seam caulk in full negative pressure containment with attached 3-stage decontamination unit.	Exterior building joints	60 LF
Remove and properly dispose of black sealant at metal joint flashing in full negative pressure containment with attached 3-stage decontamination unit.	Exterior at concrete foundation and brick	180 LF
Remove and properly dispose of decorative cement backing panel on decorative window cutouts in accordance with MassDEP 310 CMR 7.15(1) and MassDLS 454 CMR 28.12(2).	Exterior below windows	150 SF (22 Panels)

SF – square feet LF – linear feet

2. Bidders are required to verify the locations and quantities of all materials prior to the bid deadline, including the dimensions and locations of areas requiring abatement as well as the types of materials to be abated. If further investigation time is required for the quantity verification, arrangements shall be made as needed. This estimation shall be performed prior to the submission of the bid. Bidders shall inform the Consultant and the Owner of any discrepancies between the quantities and types of materials specified herein and those verified to be present by the Bidder. If appropriate, an adjustment shall be made as to the types and/or quantities to be included in the Bid. If no discrepancies with the types and/or quantities of materials to be abated are brought to the attention of the Consultant and the Owner prior to the Bid due date, it will be understood that the Bidders are in agreement with the types and quantities of materials specified herein, and no change orders will be allowed for these materials.
3. No change orders shall be granted for the types of materials identified in these specifications. For a material to be verified as an extra, the Contractor shall notify the Consultant and the Owner of the conditions believed to warrant a claim, prior to the disturbance of the material. The Consultant and the Owner shall field verify the Contractor's claim, and if deemed an extra, the contract price shall be adjusted by the unit price or through negotiation. No claims for any increase in the contract price shall be considered if the material has been removed by the Contractor without prior authorization by the Consultant and the Owner.
4. The locations and quantities of the ACM and ACWM noted above are approximate only. The Contractor is responsible for identification, field verification, and removal of all ACM and ACWM specified above.
5. The Contractor is responsible for demolition to access, investigate, and remove all ACM and ACWMs specified in the Scope of Work table. The Contractor shall include in the base bid all costs for demolition to access all ACM and ACWM identified herein.

6. If the Contractor chooses to deviate from the standard removal methods described above, a Non-Traditional Work Plan must be developed and approved by the MassDEP prior to proceeding.

B. GENERAL SCOPE OF WORK

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

1. Work area preparation, including pre-cleaning, installation of critical barriers and polyethylene sheeting, construction of decontamination facilities, work area enclosures, sealing, isolation, and other activities as directed by the Consultant or the Owner.
2. Work area preparations for each location in accordance applicable sections of MassDLS 454 CMR 28.00 and MassDEP 310 CMR 7.15 regulations.
3. Full containment removal, installation and operation of HEPA filtration units sufficient to achieve a minimum of four to six air changes per hour in each containment (if full containment removal is utilized). The exact locations of HEPA filtration units, decontamination units, and other stationary equipment shall be coordinated with other contractors, Owner and the Consultant.
4. Removal and disposal of all specified ACM, ACWM, asbestos contaminated materials and non-asbestos containing materials as specified above.
5. Pre-cleaning of all debris, as necessary, in all work areas prior to abatement.
6. Furnishing of all labor, materials, equipment, insurance, and services required for all work included in this specification.
7. Compliance with all applicable federal, state, and local regulations, as well as, all requirements set forth in these specifications.
8. Decontamination, teardown, and clean up following abatement activities.
9. Performance of any other work or activities required by this specification, applicable regulations, or as necessary to perform a complete job to the satisfaction of the Owner, and Consultant.
10. The Consultant reserves the right to collect samples of any suspect ACM and ACWM in order to verify that the ACM has been satisfactorily removed and decontaminated by the Contractor in accordance with applicable regulations and the Specifications.

C. SPECIFIC SCOPE OF WORK

The following Work shall be conducted for this project. Examine specifications for full extent and location of work to be conducted.

1. General Building Areas

   a. The Contractor is responsible for all hookups to existing water and electricity at the Site to conduct the required asbestos abatement activities. The Contractor is responsible for retaining licensed and qualified electricians and plumbers to perform electrical and water hookups as necessary to perform the asbestos

abatement activities specified herein. The Contractor is responsible for payment of all electrical permit and connection fees. The Contractor is responsible for the installation of temporary lighting in all work areas (if required), backflow protection, sanitary facilities, and shall include all costs to provide a licensed electrician to assess the facilities and provide generators, transformers and temporary electrical hookups as necessary. The Contractor shall supplement the existing electricity available at the site with generators as necessary throughout the project, due to temporary or permanent electrical shutdowns.

b. Remove and dispose of ACM and ACWM from areas which are to be disturbed as part of the project, as noted above. Coordinate this work with other contractors at the site, the Owner and the Consultant. Coordinate all system shutdowns with the Consultant and Owner in advance.

2. Refer to the Bid Forms for the scope of work required and the pricing of same.

D. PROJECT SCHEDULE

The project shall begin as soon as the 10 business day notifications take effect and upon receipt of the notice to proceed from the Owner, the Contractor shall begin scheduling the project. Completion of work includes obtaining satisfactory air clearance, acceptable post-tear-down inspection of each work area and any required clean-up resulting from tear down activities.

1.04 SEQUENCE OF WORK

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

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

B. Prior to the commencement of the work, all stored items and general items in each area and other miscellaneous items in all work areas deemed to be non-contaminated, except as noted herein, shall be removed from each work area by the Contractor and left for disposal by others. All non-contaminated non-movable items in all work areas shall be covered with two (2) layers of 6-mil polyethylene sheeting and sealed with duct tape.

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

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

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

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

G. The scheduling and sequencing of the Work of this Contract shall be determined by the Consultant with Owner review and approval.

1.05 WORK INCLUDED

The total scope of work shall not be based solely on the information provided in this specification. All work under this Section includes compliance with applicable regulatory requirements. The Contractor is required to perform quantity take-offs and measurements of the amount of material to be removed based on a site visit prior to bid submission. If additional ACM materials, not included in the scope of work outlined in this Section, are uncovered during abatement activities, the work should stop and the City and Consultant must be notified immediately. The additional material quantities must be agreed upon by the Consultant, the Contractor and the Owner prior to proceeding with removal.

1.06 SPECIAL CONSIDERATIONS

The Owner will pay for the first set of final clearance air sampling and analyses for each work area as part of the base bid price. In the event that these analyses do not pass the clearance criteria, all subsequent air sampling and analyses for the affected work areas that need to be rerun will be paid for by the Contractor. Phase Contrast Microscopy (PCM) or Transmission Electron Microscopy (TEM) shall be utilized for clearance of all areas where ACM was removed (for full containment removal). All additional monitoring and sampling costs will be automatically deducted from the Contractor's contract price until the area in question passes the clearance criteria established in this section.

1.07 SUBMITTALS

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

1. Copies of all notifications, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion;
2. Copies of Contractor's DLS licenses for asbestos;
3. A sketch of the proposed containment(s) that includes all entrances, HEPA exhausts and critical barriers;
4. A proposed timetable for the complete job that shows the preparation, removal and disposal, clean up, testing, and teardown portions of the job for each work area. A critical path showing completion dates for each area shall be included;
5. Proof of the abatement contractor supervisor's most recent training course certificate and current MassDLS license as an Asbestos Supervisor;
6. Proof of each abatement contractor worker's most recent training course certificate and current MassDLS license as Asbestos Workers;
7. Written Respiratory Protection Program for employees throughout all phases of the job, including make, model and NIOSH approval numbers of respirators to be used on this specific job;
8. Proof that the asbestos abatement supervisor and workers have been fit-tested within the past twelve months for using a negative-pressure respirator equipped with HEPA filter cartridges;
9. Proof that the abatement supervisor and workers have been examined by a qualified physician within the past 12 months, and are capable of wearing respiratory

protection and are able to perform asbestos abatement work and other related activities;

10. Proposed electrical safeguards to be implemented, including but not limited to location of transformers, GFCI outlets, lighting, and power panels necessary to safely perform the job, including a description of electrical hazards safety plan for common practices in the work area;
11. Chain of Command of responsibility at work site including supervisors, foreman, and competent person, their names, and resumes;
12. Proposed Emergency Plan and route of egress from work areas in case of fire or injury, including the name, directions/map and phone number of nearest medical assistance center;
13. The name and address of the Contractor's personal air monitoring and testing laboratory including certification of Massachusetts DLS accreditation;
14. Name, address, and ID number of the asbestos waste hauler, and proposed disposal site(s);
15. Any other documentation that applies and is called for by this or other sections of the specifications;
16. No work on the project will be allowed to begin until Owner and Consultant as listed herein approve the Pre-Job Submittals. Any delay caused by the Contractor's refusal to submit this documentation in a timely manner does not constitute a cause for change order or a time extension;
17. Contractor’s written site-specific Health and Safety Plan that includes Hazcom, Respiratory Protection, Lockout/Tagout Programs with site-specific written plans; and,

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

1. All waste shipment records and landfill receipts detailing disposal of all asbestos and asbestos-containing waste materials generated by the work.
2. All analytical results of personal asbestos air samples collected in accordance with OSHA regulations to verify that the 8-hour time weighted average (TWA) concentrations of asbestos fibers in the breathing zone of the workers has not exceeded the permissible exposure limit (PEL) of 0.1 f/cc.

1.08 TRAINING AND QUALIFICATIONS

A. Worker Training

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

1. The health hazards of asbestos including the nature of asbestos related diseases, routes of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods, and health basis for standards.
2. Personal protective equipment including the types and characteristics of respirator classes, limitations of respirators, proper selection, inspection, donning, use,

maintenance and storage of respirators, field testing the face piece to face seal (positive and negative pressure fit tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit, selection and use of disposable clothing, use and handling of washable clothing, non-skid shoes, gloves, eye protection, and hard hats.

3. Medical monitoring requirements for workers including required and recommended tests, reasons for medical monitoring and employee access to records.
4. Air monitoring procedures and requirements for workers including description of equipment and procedures, reasons for monitoring, types of samples and current standards with recommended changes.
5. Work practices for asbestos and hazardous materials abatement including purpose, proper construction and maintenance of airtight plastic barriers, job set-up of airlocks, posting of warning signs, engineering controls, electrical and ventilation system lockout, proper working techniques, waste clean-up, storage and disposal.
6. Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking, and chewing in the work area.
7. Special safety hazards that may be encountered including electrical hazards, air contaminants (CO, wetting agents, encapsulants), fire and explosion hazards, slippery surfaces, heat stress, and noise.
8. Workshops allowing both supervisory personnel and abatement workers the opportunity to observe and experience the construction of containment barriers and decontamination facilities.
9. Lockout/Tagout and Confined Space Entry procedures.

B. Site Supervisor Qualifications

1. The Contractor shall provide one Site Supervisor, whose responsibilities include coordination, safety, security, and execution of all phases of the asbestos abatement project. The Site Supervisor will not be used as an abatement worker and will be assigned full-time to the project.
2. The Site Supervisor shall be fully qualified and trained in all aspects of asbestos abatement practices and procedures. The asbestos training course will cover all topics listed above as well as training in contract specifications, liability insurance and bonding, legal considerations related to abatement, establishing respiratory protection medical surveillance programs, EPA and OSHA record-keeping programs, as well as any other topics requested by the Owner.
3. At least one licensed asbestos supervisor should be on site at all times who is certified in CPR and Emergency First Aid by an appropriate authority, as well as having received the required training under the OSHA Bloodborne Pathogen Standard.

1.09 REGULATORY SUBMITTALS

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

1. Massachusetts Dept. of Environmental Protection

1 Winter Street
Boston, Massachusetts 02108
(10 business days in advance)

2. Massachusetts Division of Occupational Safety
Department of Labor Standards
1001 Watertown Street
West Newton, Massachusetts 02165
(10 business days in advance)

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

B. Permits

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

C. Fees, Licenses, Patents, and Copyrights

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

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

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

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

1.10 SAFETY CONSIDERATIONS

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

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

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

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

1.11 SECURITY

A. The Owner will provide specific access as required during the project to the Contractor and personnel assigned to the project. The access shall be determined by the Owner. The Contractor will be responsible for the security of the building involved in the abatement project. The Contractor shall maintain security in the building using appropriate secure barriers and locks. It will also be the Contractor's responsibility to allow only authorized personnel into each work area. Authorized personnel include licensed Contractor staff, the industrial hygienist, and all other personnel with the appropriate training, medical approval, respirator fit testing, and personal protective equipment.

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

1.12 REFERENCES

The following references are cited as applicable publications:

A. Environmental Protection Agency

Asbestos Regulations (NESHAPS) Title 40 CFR Part 61, as currently amended. Guidance for Controlling Friable Asbestos Containing Materials in Buildings, Final Rule and Notice.

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

C. Commonwealth of Massachusetts
Department of Labor Standards
454 CMR 28.00, The Removal, Containment, Maintenance, or Encapsulation of Asbestos

D. Commonwealth of Massachusetts
Department of Environmental Protection
310 CMR 7.15

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

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

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

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

I. Massachusetts Waste Disposal Regulations (310 CMR 7.15).

J. Hazard Communication Standard (29 CFR 1926.59).

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

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

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

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

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

A. Fire Extinguishers

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

B. Construction Lumber

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

C. Plastic Sheeting

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

D. Adhesive Materials

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

E. Shower Assembly

1. The Contractor shall provide a leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. The Contractor shall structurally

support the unit as necessary for stability and equip it with a hose bib, mounted at approximately 4'-0" above drain pan.

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

3. The Contractor shall provide a totally submersible waterproof sump pump with an integral float switch. The unit shall be sized to pump two times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. The unit shall be capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. The Contractor shall adjust float switch so that a minimum of 3" remains between top of liquid and top of sump pan.

F. Negative Air Filtration System

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

G. HEPA Vacuum

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

H. Amended Water

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

I. Disposal Bags

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

J. Water Service

All temporary water connections to the Owner's water system shall include back-flow protection. The Contractor shall provide heavy-duty abrasion-resistant hoses with a

pressure rating greater than the maximum pressure of the water distribution system to provide water into the work area and to the Decontamination Unit. The Contractor shall provide a UL rated 40-gallon electric hot water heater to supply hot water for each Decontamination Unit shower.

K. Electrical Service

1. The Contractor shall provide temporary power service to the Decontamination Unit sub panel with minimum 60amp, 2 pole circuit breaker or fused disconnect connected to the auxiliary power source. The sub panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work. The Contractor shall comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electric service.
2. The Contractor shall provide identification-warning signs of voltage differences at power outlets that are other than 110-120 volt power and provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.
3. The Contractor shall provide receptacle outlets equipped with ground-fault circuit interrupters (GFCI), with reset button and pilot light, for plug-in connection of power tools and equipment. No electrically powered tools or equipment shall be operated without a Ground-Fault Interrupter. The Contractor shall provide the Consultant with documentation proving that the GFCI's are in proper working order.
4. The Contractor shall use only grounded extension cords. Use "hard-service" cords where exposed to abrasion and traffic. Single lengths of electric cord shall be used or waterproof connectors shall be used to connect separate lengths of electric cords, if single lengths will not reach areas of work.
5. The Contractor shall provide general service incandescent lamps of wattage required for adequate illumination (in accordance with OSHA 29 CFR 1910.56, "Illumination"). Lamps shall be equipped with guard cages or tempered glass enclosures where fixtures are exposed to breakage by construction operations. Exterior fixtures shall be provided where fixtures are exposed to the weather or moisture.

PART 3 - PROJECT EXECUTION

3.01 GENERAL CONSIDERATIONS

A. Approvals and Inspection

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

B. Damage and Repairs to The Work Site

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

C. HVAC Systems

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

1. Investigate the work area and agree on pre-abatement condition with the Owner.
2. Seal all intake and exhaust vents in the work area with tape and 2 layers of 6-mil polyethylene.
3. Seal any seams in system components that pass through the work area.
4. Remove all HVAC system filters and place in labeled, 6-mil polyethylene bags for staging and eventual disposal as asbestos-contaminated waste.

D. Barriers and Isolation Areas

1. The Contractor shall construct and maintain suitable critical barriers to separate work areas from spaces occupied by the Owner or other tradesmen. Critical barriers shall be of sufficient size and strength to prevent building occupants, the public, and others from entering the work areas.
2. Warning signs shall be posted on all critical barriers at the commencement of the work area preparation, as required in 1926.1101 of the Occupational Safety and Health Standards.
3. The signs shall display the proper legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in OSHA Standard 1926.1101. The signs will read as follows:

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

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

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

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

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

3.02 ACM & ACWM LOCATION PREPARATION AND REMOVAL

A. Area Preparation

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

B. Decontamination Unit and Procedures

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

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

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

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

5. For those areas deemed acceptable for the utilization of glovebags, a Decontamination Unit must be constructed as required by MassDEP 310 CMR 7.15(9) and MassDLS 454 CMR 28.10(5) regulations.

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

disposable protective suits in the Equipment Room and proceed into the Shower Room.

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

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

C. HEPA Filtration

Adequate negative pressure shall be provided within the enclosure (where full containment removal is utilized) as specified below.

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

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

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

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

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

   d. Automatic shut off for filter failure or absence.

   e. Audible alarm for unit shutdown.

   f. Amber flashing warning light for filter loading.

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

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

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

4. All HEPA units shall exhaust to the outside of the building.

5. Air movement shall flow uninterrupted from outside the work area through the Decontamination Unit into the work area. There shall be no other openings for air to enter the containment unless approved by the Consultant in writing.

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

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

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

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

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

D. ACM & ACWM Removal

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

2. All materials shall be sufficiently saturated/wetted to reduce fiber release so that the airborne fiber concentration does not exceed the established OSHA Permissible Exposure Limits (PEL's).

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

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

5. Fine cleaning of residual asbestos-containing material shall consist of carefully scraping or brushing the material from surfaces. The recommended method for brushing a substrate after gross removal has taken place is to use a nylon brush. Wetting of the substrate shall also occur while this brushing is performed, since the chance of airborne fiber generation during fine cleaning still exists.
6. After brushing and scraping, surfaces shall be free of visible debris and fibers. A final wipe-down of the substrate with wet, lint-free cloths shall take place in order to ensure proper cleaning. All surfaces including floors, walls, ceilings, and suspended ceiling grid-work shall also be HEPA vacuumed clean.
7. If encapsulation is to be conducted, all visible asbestos-containing material is to be removed by the Contractor before encapsulation procedures are allowed to begin. The Consultant will conduct an inspection of the work area prior to giving approval to begin encapsulation of the work area. The removal substrate must be clean and bare, and the entire work area must be free and clear of any suspect material for the Contractor to pass this visual inspection and begin encapsulation.
8. Air testing will be performed continuously outside the contained asbestos work areas. If fiber concentrations exceed 0.010 fibers/cc, or background levels, work shall cease until the integrity of the work area containment is visually assessed and the probable cause of the elevated area samples is determined. If any breeches in containment are observed, the Contractor shall immediately restore the containment to satisfactory condition before proceeding with work. If, due to a breech in containment or other factors, suspect ACM debris is released to surrounding areas, the Consultant will notify the MassDLS and DEP to collaborate on further corrective actions that may be required.

E. Floor Coverings and associated Mastics

1. Asbestos-containing floor coverings and mastics requiring abatement are present within the Site.
2. The Asbestos Contractor shall remove all asbestos-containing floor coverings, including but not limited floor tile, residual mastic, floor sheeting mastic, mastic on concrete, and multilayered floor coverings that are to be impacted by demolition. Removal shall include all layers to expose bare substrate.
3. The Asbestos Contractor shall eliminate all mastic remnants when positive. The Asbestos 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 Asbestos 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.

F. Glovebag Removal Procedures

1. For activities that disturb friable ACM, no visible emissions shall be discharged to the outside air during the collection, processing, packaging, or transporting of ACM or ACWM.
2. Glovebags shall be used only on those facility components for which they are specifically designed and they shall not be modified for use on any other type of

facility component. Glovebags shall be constructed of six-mil thick (minimum) plastic sheeting and be seamless at the bottom.

3. Glovebags shall be used only once and shall not be moved along the facility component from where they are initially applied.
4. Glovebags shall not be used to abate facility components hotter than 150°F.
5. The work are shall be isolated in accordance with MassDEP 310 CMR 7.15(7)(c)5.c. and MassDLS 454 CMR 28.10(5) regulations cleaned of visible debris by wet wiping or HEPA vacuuming prior to the installation of the glovebag.
6. Glovebags shall be installed so as to form an airtight covering around the facility component(s) on which they are to be used. Any friable ACM in the immediate area of glovebag installation shall be wrapped and sealed in two layers of six-mil thick plastic sheeting or otherwise maintained intact prior to glovebag installation. Where points of attachment are not airtight, that shall be rendered airtight by wrapping with re-wettable fiberglass cloth, or an equivalent material, prior to attaching the glovebag. All openings in the glovebag shall be sealed against leakage with duct tape or the equivalent.
7. ACM shall be adequately wetted with amended water prior to its removal and shall be maintained in an adequately wet condition inside the glovebag.
8. Any ACM that has been exposed as a result of the glovebag operation shall be removed, encapsulated, or enclosed so as to prevent the leakage of asbestos fibers prior to the removal of the glovebag.
9. All surfaces inside the glovebag from which ACM has been removed and the upper portions of the glovebag itself shall be cleaned free of visible debris prior to the removal of the glovebag.
10. Debris shall be isolated in the bottom of the glovebag by twisting the bag so as to form a closure in the middle. This closure shall then be taped around with duct tape or the equivalent. Air in the glovebag shall be exhausted with a HEPA vacuum cleaner prior to its removal.
11. Following removal for the facility component, the glovebag and its contents shall be containerized in accordance with MassDEP 310 CMR 7.15(15) and 19.000, Solid Waste Management and MassDLS 454 CMR 28.10(4)(d).

G. Asbestos-Containing Asphaltic Roofing Removal

1. If the requirements of MassDEP 310 CMR 7.15(10) and MassDLS 454 CMR 28.12(2) are followed, asbestos-containing asphaltic roofing may be disposed of in any landfill permitted by the MassDEP to accept solid waste pursuant to 310 CMR 19.000: Solid Waste Management. If the asbestos-containing asphaltic roofing are not handled in accordance with 310 CMR 7.15(10) or if the MassDEP has determined that asbestos fibers may be released during handling, removal or disposal, then the materials shall be disposed of in a landfill that has obtained a special waste permit to accept asbestos wastes or is managing such wastes in accordance with 310 CMR 19.061: Special Waste.

2. Work Procedures

   a. Roof level heating and ventilation intakes shall be isolated by covering the intakes with six-mil thickness plastic sheeting prior to the start of the removal work.

   b. Roof flashing caulk shall be removed intact to the greatest extent possible.

   c. Roof flashing caulk that are not intact or will be rendered non-intact shall be adequately wet during removal.

   d. When cutting machines are used in the removal of the roof flashing caulk, said cutting machines shall be equipped with a HEPA vacuum to capture dust produced by the cutting process. Cutting machines that are not equipped with a HEPA vacuum to capture dust produced by the cutting process shall only be used inside a work area for which containment sufficient to prevent emissions of fugitive dust to the ambient air has been established.

   e. Dust produced by power roof cutters operating on aggregate surfaces shall be removed by HEPA vacuuming. Dust produced by power roof cutters operating on non-aggregate, smooth surfaces shall be removed by HEPA vacuuming or wet wiping along the cut line.

   f. Roof flashing caulk shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground by crane, hoist or transferred in dust-tight chutes.

   g. Roof flashing caulk shall be placed in an impermeable waste bag (six-mil thickness) or wrapped in plastic sheeting (minimum six-mil thickness), sealed with duct tape or equivalent and lowered to the ground prior to the end of each work shift.

   h. For activities that disturb friable ACM, no visible emissions shall be discharged to the outside air during the collection, processing, packaging or transporting of any ACM or ACWM.

H. Asbestos-Containing Cementitious Panel/Siding Removal

1. Asbestos cement panels/siding shall not be broken, sanded, sawed, or drilled at any time during removal or subsequent handling.

2. Tarpaulin or plastic sheeting shall be spread on the ground under the areas where the panels/siding are being removed. Said tarpaulin or plastic sheeting shall extend away from the edge of the building and to either side of the work area a sufficient distance to catch any debris generated by the work operation. Tarpaulin or sheeting shall be cleaned of accumulated debris no later than the end of each work shift.

3. Openings on the side of the building where the asbestos abatement activities are taking place shall be closed or sealed with polyethylene sheeting and duct taped in a manner sufficient to prevent leakage of dust or debris into interior spaces.

4. Nails securing panels/siding shall be cut or pulled to allow intact panel removal. Cementitious asbestos containing panels/siding shall be removed whole and intact to the greatest extent possible. Methods likely to break panels/siding during removal shall not be used.

5. Each panel/siding shall be adequately wetted with amended water prior to removal.

6. Panels/siding shall be carefully lowered to the ground in a manner to avoid breakage.
7. Removed panels/siding and associated debris shall be containerized in leakproof metal, plastic, or plastic lined drums or boxes or wrapped with double thickness plastic sheeting (6-mil thickness each layer) sealed with duct tape no later than the end of each work shift.
8. Uncontained asbestos cement panels/siding shall not be bulk loaded into a truck, dumpster, or trailer for storage, transport, or removal.
9. For activities that disturb friable ACM, no visible emissions shall be discharged to the outside air during the collection, processing, packaging, or transporting of any ACM or ACWM.

I. Removal of Critical Barriers

1. No critical barrier shall be taken down until the final visual inspection and final clearance air tests (where required) are found to be below 0.010 fibers/cc by PCM, or less than 70 structures/mm^2 by TEM.
2. After a successful final visual inspection, and a successful final air test, the Contractor shall conduct the post abatement tear down with the Consultant.
3. All polyethylene sheeting used in the construction of the Decontamination Unit and Containment Area shall be bagged and disposed of as asbestos contaminated waste.
4. Areas exposed during this process shall be examined for traces of suspect material, and if observed, properly vacuumed and wet-wiped while misters are used in the general vicinity.

3.03 DISPOSAL OF ASBESTOS WASTE (ACWM)

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

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

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

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

CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

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

F. Temporary storage of asbestos waste on-site (inside) will be in accordance with regulations unless approval has been granted by the MassDEP.

3.04 SCRAP METALS REMOVAL

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

3.05 HOUSEKEEPING

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

1. Contaminated disposable clothing, respirator filters, and other debris shall be bagged and sealed at the end of each workday.
2. All asbestos generated by either removal or repair shall be bagged immediately and not be allowed to be left exposed at the end of each workday.
3. Respirators shall be thoroughly cleaned at the end of each workday and stored for the next day's use.
4. The Contractor shall retain all stored items in an orderly arrangement allowing maximum access, not impeding traffic, and providing the required protection materials.
5. The Contractor shall not allow the accumulation of scrap, debris, waste material, and other items not required for completion of the work.
6. The Contractor shall provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.
7. Daily, and more often if necessary, the Contractor shall inspect the work areas and adjoining spaces, and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
8. The Contractor shall maintain the site in a neat and orderly condition at all times.

3.06 QUALITY CONTROL

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

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

C. Air Monitoring

1. The air clearance acceptance criteria for this project is <0.010 fibers per cubic centimeter of air (f/cc) by Phase Contrast Microscopy (PCM) using the NIOSH 7400 Method, or below 70 structures per mm^2 by TEM analysis.
2. Background (pre-testing) air samples may be collected to represent conditions before the Contractor starts masking and sealing operations.

3. During removal, area samples will be collected by the Consultant outside major openings in the containment: in the clean room, at other critical points outside the work areas, just outside the clean room, and at HEPA exhaust locations. Final clearance air samples will be collected inside each removal area after acceptance of visual inspection (where full containments are utilized).

4. A sufficient number of samples, as defined by applicable regulations, will be collected for clearance air sampling purposes. Air will be agitated by means of a small leaf blower prior to sample collection and kept agitated by means of a small electric fan. The results of all samples must comply with the regulations set forth in this specification. Failure to meet the specified criteria will require the Contractor to re-clean the designated work area, prior to the Consultant repeating the clearance air sampling process. All repeat air testing shall be the Contractor's financial responsibility. Cleaning and testing will be repeated until the specified criteria are met.

D. Work Review

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

2. The Consultant will review the Contractor's engineering controls for each work area containment prior to commencing asbestos removal activities to ensure compliance with this specification and applicable regulations.

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

3.07 PERSONAL PROTECTION

A. Respirators and Protective Clothing

1. Protective Clothing

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

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

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

d. Removal workers shall not be limited to two uniforms, and the Contractor will be required to supply additional uniforms as is necessary. Under no circumstances will anyone entering the removal area be allowed to reuse a contaminated uniform.

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

2. Respiratory Protection

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

b. Appropriate respirator selection shall be determined by the daily personal samples being taken and strictly follow the guidelines set forth in the OSHA respiratory program 29 CFR 1910.134 and the Massachusetts DLS Regulations 454 CMR 28.00. The respirators shall be sanitized and maintained according to the manufacturer's specifications. Appropriate respirators shall be selected using the information provided in OSHA Title 29 CFR Part 1910.1926 Final Rules. This determination has been made for this project. Disposable respirators shall not be considered acceptable in any circumstance.

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

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

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

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

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

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

3. Personal Sampling

a. The Contractor shall provide daily personal sampling to check personal asbestos exposure levels for the purpose of establishing respiratory protection needs.

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

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

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

e. Asbestos air sampling results shall be available for posting at the job site in written form no more than twenty-four (24) hours after the completion of a sampling cycle.

The document shall list each sample's result, sampling time and date, individual monitored, flow rate, sampling duration, microscope field area, number of fibers per fields counted, cassette size, and analyst's name and company. Air sample analysis results will be reported in fibers per cubic centimeter.

END OF ASBESTOS ABATEMENT

LEAD-CONTAINING PAINT CONSIDERATIONS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Division 00 and 01 are hereby made part of this Section.

B. In addition to the requirements specified herein, refer to all Contract Documents for complete description of work required to be performed under this Section.

C. Examine all other Sections of the Specifications for requirements of related sections affecting the work of this Section. A lead determination at the site indicates that various building components are considered to be coated with lead containing paint. **Contractor shall assume that all building components included in the project scope of work are coated with lead containing paint.**

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

E. It is the intent of the Specifications to require that the equipment to be furnished complete in every respect, and that this Contractor shall provide all equipment needed and usually furnished in connection with such systems to provide a complete installation. Equipment, materials, and articles incorporated in the work shall be new and of the best grade of their respective kinds

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

G. Requirements of the Contractor regarding coordination and related work are identified in this Section and shall be considered the responsibility of the Contractor.

H. Use of roads at the site and all access to the site shall be as required by the Owner, and where described elsewhere in the Specification.

I. For the purpose of this Section, the following definitions apply:

1. *"Site"* shall refer to 89-91 Maple Street, Baldwin Cottage, and North Branch Library, located in Waltham, MA.
2. “Contractor” shall refer to the Abatement/Demolition Contractor
3. *"Owner"* shall refer to the City of Waltham.
4. "*Consultant"*For Bidding Questions- refers to EFI Global, Inc. *A designated authorized representative of the owner for the purpose of inspecting, monitoring and testing to be determined after award.*

1.02 DESCRIPTION OF WORK

A. The work of this Section specifies minimum requirements for the disturbance, removal, containment, and disposal of lead-containing paint and associated waste generated as a result of renovation activities at the Site as outlined in the Specifications.

B. The procedures described herein apply to all construction/demolition work where a worker may be occupationally exposed to lead as well as to the disposal of the demolition debris. The Contractor shall assume that any painted surface not tested, as included in this Section, shall be assumed to contain lead paint and it shall be the Contractor’s responsibility to protect workers performing under this Contract. This may require

additional testing by the Contractor to verify lead content.

C. The Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state and local regulations pertaining to work practices, hauling and disposal of hazardous waste, hauling and recycling of all metal components coated with lead-containing paint, protection of workers and visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Owner, and Consultant harmless for failure to comply with any applicable work, hauling, disposal, safety, health or regulation on the part of himself, his workers or his subcontractors.

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

E. Codes and Standards

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

2. In addition to any detailed requirements of the Specification, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of federal, state, regional and local authorities regarding handling and storing of lead waste material.

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

a. Code of Federal Regulations (CFR) Publications:

29 CFR 1910 –	General Industry
29 CFR 1926.55 –	Gases, Vapors, Fumes, Dusts and Mists
29 CFR 1926.57 –	Ventilation
29 CFR 1926.62 –	Lead in Construction
29 CFR 1926.200 –	Signs, Signals and Barricades
29 CFR 1926.354 –	Welding, Cutting and Heating in Way of Preservative Coatings
29 CFR Subpart T –	Demolition
40 CFR 50 –	National Primary and Secondary Ambient Air Quality Standards for Lead

40 CFR 61 Subpart A – General Provisions

40 CFR 61.152 –	Standard for Waste Manufacturing, Demolition, Renovation, Spraying, and Fabricating Operations.
40 CFR 241 –	Guidelines for the Land Disposal of Solid Wastes
40 CFR 257 –	Criteria for Classification of Solid Waste

40 CFR 261 and 262 – Waste Disposal Facilities and Practices

b. Massachusetts Regulations:

454 CMR 22.11 –	Safety Procedures for renovation

454 CMR 23.00 – Occupational Lead Exposure

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

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

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. The work of this Section shall be performed as stated herein. In performing the work of this Section, the Contractor shall refer to other Divisions for additional procedures. The Contractor is responsible for the coordination of the work of this Section with other related work.

B. Portions of the work herein require direct coordination with the work of the above noted Related Sections.

1.04 DEFINITIONS

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

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

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

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

4. Consultant: Authorized representatives who are under contract with the Owner to perform Engineering or Consulting services.

5. Contractor: The term Contractor refers to the Contractor and its Sub Contractors.

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

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

8. Lead Containing Paint: Paint, varnish, or stain that contains lead in excess of 0.0 mg/cm^2 or 0.0% lead by weight.

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

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

11. Time Weighted Average (TWA): The TWA is an 8-hour time weighted average for the

test of the concentration of lead for worker exposure.

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

13. Work Area: A controlled-access work area which has plastic sheeting or other containment barriers erected to separate the trades.

1.05 SUBMITTALS

A. Notifications

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

B. Prior to commencing any work under this Section, the Contractor shall submit the following items to the Owner/Consultant for review. No Work under this Section may commence until the Owner/Consultant has accepted all required submittals.

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

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

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

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

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

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

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

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

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

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

11. Name and address of the proposed metal component construction debris recycling site, including letter stating such site accepts such waste,
12. Construction schedule including sequence of critical work.

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

1. Copies of waste manifests and receipts acknowledging disposal and recycling of all lead waste material from the project, showing delivery date, quantity, and appropriate signature of landfill's authorized representative.
2. A notarized copy of the daily list of workers and site entry-exit logbook,
3. All personnel monitoring results,
4. All TCLP testing results.

1.06 GENERAL WORK PROCEDURES

A. Work shall be carried out in sequential phases. The Contractor shall provide the Owner/Consultant, with a draft schedule for review and approval to be used for the duration of the project. Inspection and approval of each phase by the Owner shall be sought and gained before proceeding to the next phase and in accordance with the schedule agreed upon by Owner and Contractor at the Pre-Construction meeting as amended. This shall include demolition requirements for work area clearance and work area release prior to general construction work. As a Contract requirement, any reasonable delay caused by this requirement will not constitute a basis for claim against the Owner. Contractor must coordinate the work of this section with the work of the Contractor and all other trades.

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

C. The working hours for this project are as noted in Division 01.

1.07 SPECIAL CONSIDERATIONS

A. Testing References

1. Limited testing for lead paint has been performed on a representative number of painted surfaces and components in the areas scheduled for renovation using paint chip sampling.
2. Contractor is to assume that all painted surfaces and components are lead-containing.
3. The Occupational Safety and Health Administration (OSHA) requires employers to determine the airborne concentration of lead in dust in order to determine the employee’s exposure hazard while impacting these coated surfaces and requires that the Contractors and their employees adhere to the OSHA Lead-in-Construction standard found at 29 CFR 1926.62.

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

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

1. No torch cutting, mechanical sanding or stripping or abrasive methods of paint removal shall occur.
2. No demolition or renovation activities shall occur which increase the workers' exposure above the Action Level of 30 µg/m^3. Contractor shall fully complete with the OSHA lead standard at 29 CFR 1926.62.
3. Workers shall be informed of the components to be impacted during renovation or demolition that have been identified as containing lead.
4. Worker protection, at a minimum, shall comply with the OSHA Lead Standard 29 CFR 1926.62. Worker Right to Know and Health and Safety Standards of 1926.62 shall also apply to the work of this section.
5. Separation of Trades: Unprotected, untrained workers or trades shall not perform any related work within the same vicinity as work involving components identified with lead.
6. Clean-up Activities: The Contractor shall maintain work zones free of accumulated debris and paint chips of demolition involving lead.

1.08 REPORT OF FINDINGS

A. The tables below identify various components as containing lead in excess of 0.0 mg/cm^2 for the Hillside House, Canteen Building and the Howe Administration Building at the Fernald Center Campus in Waltham, Massachusetts. The tables were derived from a lead paint determination at the Subject Sites. This inspection included the testing of representative painted surfaces and is not intended to be a comprehensive identification of all painted surfaces.

B. The Occupational Safety and Health Administration (OSHA) requires employers to determine the airborne concentration of lead in dust in order to determine the employee's exposure hazard while impacting these coated surfaces and requires that the Contractors and their employees adhere to the OSHA Lead-in-Construction standard found at 29 CFR 1926.62.

Summary of Lead Paint Chip Sampling
89-91 Maple Street, Waltham, MA

LOCATION	SUBSTRATE	COLOR	% Weight of Lead Content
Stone Foundation	Stone	White	<0.009%
Stair Railing	Wood	White	<0.009%
Interior Wall	Plaster	Gray	<0.010%
Interior Window Trim	Wood	White	<0.009%
Interior Trim	Wood	White	1.261%
Interior Stair Tread	Wood	Gray	0.132%
Interior Wall	Gypsum	Pink	<0.008%

LOCATION	SUBSTRATE	COLOR	% Weight of Lead Content
Interior Wall	Gypsum	Gray	<0.010%
Interior Radiator	Metal	Gray	0.132%
Interior Wall	Plaster	Pink	0.120%
Interior Wall	Plaster	White	<0.009%
Interior Wall	Plaster	Gray	<0.009%
Interior Wall Base	Wood	White	<0.009%
Interior Wall	Gypsum	Tan	<0.010%
Exterior Trim	Wood	White	13.150%

Summary of Lead Paint Chip Sampling
Baldwin Cottage – 338 Trapelo Road, Waltham, MA

LOCATION	SUBSTRATE	COLOR	% Weight of Lead Content
Interior Wall	Plaster	Red	20.980%
Interior Door	Wood	Red	2.910%
Exterior Door	Wood	Red	1.431%
Pipe	Metal	White	29.290%
Interior Wall	Plaster	White	24.610%
Interior Door Frame	Wood	White	0.027%
Exterior Trim	Wood	White	25.060%
Interior Wall	Brick	White	0.290%
Exterior Foundation	Stone	White	<0.009%

Summary of Lead Paint Chip Sampling
North Branch Library – 655 Lexington Street, Waltham, MA

LOCATION	SUBSTRATE	COLOR	% Weight of Lead Content
1st Floor Foyer	Plaster	White	0.082%
Basement Rec Room	Concrete	Yellow	0.025%
Basement Boiler Room Door Frame/Wall	Metal/Block	Blue	1.0%
Exterior Trim	Wood	White	8.5%
Exterior Trim	Wood	Black	6.9%
Exterior Guardrail	Metal	Black	0.22%

1.09 FEES, PERMITS & LICENSES

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

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

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

1.10 CLEAN-UP

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

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

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

1.11 COORDINATION

A. Extend full cooperation to Owner in all matters involving the use of Owner's facilities. At no time shall Contractor cause or allow to be caused conditions which may cause risk or

hazard to the general public or conditions that might impair safe use of the facility. The use of the facility's electricity, water or like utilities by the Contractor shall be as specified in Division 1.

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

C. Unless specifically authorized by the Owner, the work of this project shall be conducted in accordance with the working hours agreed upon in the Pre-Construction Meeting.

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

1. Post Inspection: At the completion of work and final clean up, prior to clearance or removal of any critical barriers and decontamination unit from the work area.
2. Waste Removal Inspection: Prior to removal of hazardous waste from the site, Owner and Consultant will inspect the quantity and type.

1.12 EMERGENCY PRECAUTIONS

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

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

1.13 DISPOSAL OF WASTE MATERIAL

A. General

1. The Contractor shall comply with the Resource Conservation and Recovery ACT (RCRA) and with all applicable state and local regulations.
2. The Contractor shall be responsible for disposing of all metallic waste and components determined to be coated with Lead-Based paint (LBP) by separating and recycling.
3. The Contractor shall be responsible for disposing of all non-metallic waste determined by Toxicity Characteristic Leachate Procedure (TCLP) to be hazardous. The Contractor shall be responsible for testing representative building components prior to demolition of building structures and selective waste streams post demolition work.
4. The Contractor shall comply with all EPA regulations.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

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

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

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

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

2.02 MATERIALS

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

A. Fire retardant polyethylene sheeting, minimum thickness of six (6)-mil.

B. Plastic bags, minimum thickness of six (6)-mil.

C. Duct Tape, up to 3 inch width

D. Lead Warning Signs, as required by Section 3.02, the MA DOS Regulations, and OSHA Hazard Communication requirements.

E. Flexible duct for ventilation units (if required)

F. Spray adhesive, fire retardant

G. Personal Protective Equipment, NIOSH approved respirators

H. Ventilation units with HEPA filtration and exhaust fans.

I. HEPA vacuums

J. Tri-sodium Phosphate (TSP) and product data

K. Cloth tarpaulin

2.03 TOOLS AND EQUIPMENT

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

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

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

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

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

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

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

PART 3 - EXECUTION

3.01 SCHEDULING

A. The Contractor shall coordinate all scheduling with the Owner. A schedule of work shall be submitted to the Owner, prior to contract performance.

3.02 UTILITIES

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

3.03 IDENTIFICATION OF HAZARDS

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

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

3.04 BARRIERS AND ISOLATION AREAS

A. Negative pressure containment controls (including critical barriers, protective coverings, HEPA-filtered ventilation and decontamination facilities) may be required for renovation work. The degree of containment shall be appropriate for the anticipated levels of airborne lead dust. The lower the level of airborne lead, the lesser the requirements necessary to control lead emissions at the job site.

B. Work Area Isolation (unless exempted according to Paragraph A)

1. The Contractor shall isolate work areas for the duration of work by completely sealing off all openings in the work area. Isolation scaling shall be accomplished by constructing critical barriers where necessary around the work area perimeter. The work area shall be sealed airtight to the greatest extent possible.

2. Provide temporary power and lighting (with ground fault circuit interrupt protection) to the work areas, and ensure safe Installation of temporary power sources and equipment per applicable electrical code requirements, and OSHA requirements for temporary lighting in the environment normal to renovation areas.

C. Equipment and Services: The Contractor shall provide portable lighting, staging and scaffolding, utility hook-ups, portable fire extinguishers, first aid equipment, and all other equipment or items for the safe and efficient performance of Work.

D. Decontamination Facility:

1. The Contractor shall erect one or more Decontamination Facilities (if applicable) to serve each work area. The facility will consist of series of two or more connected chambers including, at a minimum, a clean room and a shower/wash room, separated by an air lock. Unless otherwise specified, the shower/wash room shall be contiguous to the work area. Non-contiguous, remote, three-chamber decontamination facilities may be substituted with the Consultant's prior written approval. Three-chamber decontamination facilities shall include an equipment room to be used for removal and temporary storage of contaminated worker clothing, equipment, and other items leaving the work area, prior to decontamination in the shower/wash room of the decontamination facility.
2. In all cases, non-emergency access between contaminated and uncontaminated rooms or areas shall only be through the Decontamination Facility/Wash Room.
3. Ensure that barriers and linings are effectively sealed and taped at all times, and that the Shower/Wash Room floor is completely watertight. Repair damaged barriers, and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning of each work period.

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

1. Signs shall be posted at all approaches to the work area warning that work involving lead is being conducted in the vicinity. Signs shall be in bold lettering not smaller than two inches tall.
2. Barriers shall not be removed until the work areas are thoroughly cleaned and approved by the Owner/Consultant.

3.05 APPROVALS AND INSPECTIONS

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

3.06 PERSONNEL SAMPLING – CONTRACTOR

A. Perform personnel air sampling during all renovation work to determine worker exposure limits. The results of such sampling shall be posted, provided to individual workers, and submitted to Owner/Consultant as described herein.

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

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

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

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

3.07 WORK PROCEDURES

A. The Contractor shall initiate, and continue, sufficient engineering and work practice controls, as described in the Contractor's Lead Compliance Program, to reduce and maintain worker exposures to lead at or below the Action Level. In all designated lead removal work areas, all paint will be removed to the substrate.

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

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

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

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

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

5. Under no circumstances shall workers or supervisory personnel eat, drink, smoke, chew gum, or chew tobacco in the work area; to do so shall be grounds for the Owner/Consultant to stop all demolition operations. Only in the case of life threatening emergency shall workers or supervisory personnel be allowed to remove their protective respirators, if applicable, while in the work area.

3.08 RENOVATION PROCEDURES

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

1. No torch cutting, mechanical sanding or stripping or abrasive methods of paint removal shall occur.
2. No renovation activities may occur which increase the workers exposure above the Action Level of 30 µg/m^3. Contractor shall fully comply with the OSHA lead standard 29 CFR 1926.62.

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

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

3.09 STORAGE OF WASTE

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

1. Location of waste and recycling containers on site shall be coordinated with the Contractor, subject to Owner's approval.
2. Waste containers shall be lined with two layers of six-mil polyethylene sheeting, be solid, enclosed containers, locked and sealed at all times. This requirement applies to waste classified as hazardous based on TCLP testing.
3. Contractor shall comply with all federal, state, and local regulations and ordinances regarding lead waste and recyclable storage.

END OF SECTION

SECTION 013300

SUBMITTAL REQUIREMENTS

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 REQUIREMENTS INCLUDED

A. Shop drawings, products data, and samples.
B. Contractor Responsibilities.
C. Submission Requirements.
D. Resubmission Requirements.
E. City of Waltham's and Designer's Review and Distribution of Submissions.
F. Schedule of values.
G. Health and Safety Plan
H. Work Plan
I. Waste Management Plan
J. Submittal Summary Table

1.3 SHOP DRAWINGS, PRODUCTS DATA, AND SAMPLES

A. Review and submit to the Designer and where outlined below to the City of Waltham, shop drawings, project data and samples required by Specifications Sections.

B. No submissions made by FAX will be accepted.

C. The Contractor, after the Pre-Construction Meeting, shall prepare and submit for the Designer and the City of Waltham's approval, a Schedule of Shop Drawings, Product Data and Samples required to be submitted for the Work. The schedule shall indicate, by trade, the date by which final approval of each item must be obtained, and shall be revised as required by conditions of the Work, subject to the City of Waltham's approval. The Schedule of Shop Drawings, Product Data and Samples shall correspond with the construction schedule so that the submissions relate to the time when the products and/or systems will be required on the site. Neither the Designer nor the City of Waltham will approve a schedule that calls for out-of-sequence submittals.

D. Shop Drawings:

1. Original drawings shall be prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate some portion of the Work, showing fabrication, layout, setting, or erection of details.
   a. Shop drawings shall be prepared by a qualified detailer.
   b. Details shall be identified by reference to sheet and detail numbers indicated on Contract Drawings.
   c. Maximum sheet size shall be 30-inch by 42-inch.
   d. Submit with the required number of opaque prints specified herein.

E. Product Data:

1. Manufacturers' catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Provide manufacturer's catalogue sheet, specification for each product and other pertinent data as required under the individual specification.
   a. Modify product data submittals to delete information, which is not applicable to the project.
   b. Supplement standard information to provide additional information applicable to the project.
   c. Clearly mark each copy to identify pertinent materials, products, or models.
   d. Show dimensions and clearances required.
   e. Show performance characteristics and capacities.
   f. Show wiring diagrams and controls.

2. All such data shall be specific and identification of material or equipment submitted shall be clearly made in ink. Data of general nature will not be accepted.

3. Product Data shall be accompanied by transmittal notice. The Contractor's stamp of approval shall appear on the printed information itself.

F. Samples:

1. Physical samples shall illustrate materials, equipment, or workmanship, and shall establish standards by which work is judged. After review and approval, samples may be used in construction of project if not retained for comparison

2. Unless otherwise specified in the individual Section, the Contractor shall submit two labeled specimens of each Sample.

3. Samples shall be of adequate size to permit proper evaluation of material. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of the approved samples will not be approved on the Work.

4. Samples which can be conveniently mailed shall be sent directly to the Designer, accompanied by transmittal notice. On the transmittal notice the Contractor shall stamp his approval of Samples submitted.

5. All other Samples shall be delivered at the field office of the City of Waltham with Sample identification tag attached and properly filled in. Transmittal notice of Samples so delivered with the Contractor's stamp of approval, shall be mailed concurrently to the Designer and the City of Waltham to confirm their receipt thereof.

6. If Sample is rejected by the Designer, a new Sample shall be resubmitted in the manner specified herein above. This procedure shall be repeated until the Sample is approved in writing by the Designer.

7. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of Samples whether or not specified in the Specifications, at no additional cost to the Commonwealth.

1.4 CONTRACTOR'S RESPONSIBILITIES:

A. Review shop drawings, Product Data and Samples prior to submission. Verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with Specifications.

B. All shop drawings prepared by subcontractors shall be processed through the Contractor. The Contractor shall check all the shop drawings for conformity with the Contract Documents and particularly for field measurements and proper fit with adjoining work prior to submitting same to the Designer for approval. Certification shall appear on each shop drawing stating that the Contractor has made his/her check.

1. The Term "By Others" shall not be used on shop drawings, the Contractor shall state by who related items are to be furnished and/or installed.

2. The Designer reserves the right to reject and return to the Contractor, without examination, any shop drawings which have not been previously checked and certified as outlined above, which carry the term "by other" or such vague reference, which are difficult to read, which have arrived by FAX or which in any way are obviously not in conformity with Contract Requirements.

3. Shop drawings shall show materials, design, dimensions, connections and other details necessary to ensure that they accurately interpret the Contract Documents and shall also show adjoining work in such detail as required to provide proper connection with same.

4. The Designer will check and approve shop drawings only for conformance with the design concept and for compliance with information given in the Contract Documents. Approval of shop drawings by the Designer will not release the Contractor from his responsibility for furnishing same of proper dimensions, size quantity and quality to effectively perform the work and carry out the requirements and intent of Contract Documents.

5. Such approval will not relieve the Contractor from responsibility for errors of any sort in the shop drawings, nor for the proper coordination of any submittal with all other work. If the shop drawings deviate, or are intended to deviate, from the Contract Documents, the Contractor shall so advise the Designer in writing at the time the shop drawings are submitted, stating the difference in value between the Contract requirements and that denoted by said shop drawings.

6. The Contractor shall assume full liability for delay attributed to insufficient time for delivery and/or installation of material or performance of the work when approval of pertinent shop drawing is withheld due to the failure of the Contractor to submit, revise, or resubmit shop drawings in adequate time to allow the Designer and the City of Waltham a reasonable time, not to exceed twenty-one (21) calendar days, for normal checking and processing of each submission or resubmission.

C. Coordinate each submittal with requirements of Contract Documents.

D. The Contractor's responsibility for errors and omissions in submittals is not relieved by the Designer’s review and approval of submittals, unless Designer gives tentative written acceptance of specific deviations identified as such by the Contractor, subject to written concurrence by the City of Waltham.

E. Notify the Designer in writing at the time of submission, of deviations in submittals from requirements of Contract Documents or previous submissions.

F. Work that requires submittals shall not commence unless submitted with Designer’s stamp and initials or signature indicating review and approval, and a representative of the City of Waltham’s initials or signature of concurrence indicate review and approval.

1. No work shall be started in the shop or on the job, or materials delivered to the site, until pertinent shop drawings have been approved by the Designer and the City of Waltham.

G. After aforesaid review and approval, distribute copies.

H. Maintain one (1) copy of each approved submittal at the project site.

1.5 SUBMISSION REQUIREMENTS:

A. General: All submittals shall be made to the Designer’s Office. The quantity and make-up of

submittals shall be as established by the Designer; however, two (2) additional copies of all submittals shall be transmitted to the City of Waltham at the same time that such submittals are transmitted to the Designer. The Designer will log and distribute submittals for review by his consultant Designers.

B. Make submittals promptly in accordance with approved schedules, and in such sequence as to cause no delay in the work.

C. Submit number of samples specified in each Section of the Specifications.

D. Submittals shall include:

1. Date and revision dates.
2. Project title and number.
3. The names of:
   a. Designer;
   b. Contractor;
   c. Subcontractor;
   d. Supplier;
   e. Manufacturer;
   f. Separate detailer when pertinent.
4. Identification of product or material.
5. Location of work and relation to adjacent structure or materials.
6. Field dimensions clearly identified as such.
7. Specification Section number and specific paragraph under which item is specified.
8. Submission number.
9. Applicable standards, such as ASTM number.
10. A blank space, five-inch by four-inch, for the Designer's stamp.
11. Contractor's remarks. Identify exceptions or deviations from Contract Documents and reasons for them.
    a. If shop drawings submitted by the Contractor indicate a departure from the Contract and the Designer deems it to be minor adjustment in the interest of the City of Waltham (subject to concurrence by the Contractor stating it does not involve a change in Contract Price or extension of time), the Designer may approve the submission, but the approval shall be subject to the City of Waltham review and acceptance of the Designer's recommendation.
    b. The approval of the City of Waltham shall be inferred to contain in substance the following: The change is so ordered with the understanding that it does not involve any change in the Contract Price or Time, and that it is subject generally to all contract stipulations and covenants, and is without prejudice to any and all rights of the City of Waltham under the Contract.
12. Contractor's stamp, initialed or signed certifying review and approval of submittal.
13. Any other items as called for by the Designer, the City of Waltham or required by the manufacturers.
14. The Designer reserves the right to ask for shop drawings for any or all items on the project, whether or not requested in individual specification sections, at no additional

cost to the Commonwealth.

1.6 RESUBMISSION REQUIREMENTS:

A. Resubmission: Resubmission procedure shall follow the same procedures as the initial submittal with the following exceptions:

B. Shop Drawings:

1. Transmittal shall contain the same information as the first transmittal except that the submission number shall change sequentially. The drawing number/description shall be identical as the first transmittal but the date shall be the revised date for that submission.
2. No new material should be included on the same transmittal for the resubmission.
3. Indicate on drawings any changes which may have been made other than those requested by the Designer.

C. Product Data and Samples:
1. Submit any new data and samples as required from previous submittal.

1.7 THE CITY OF WALTHAM AND DESIGNER'S REVIEWS AND DISTRIBUTION OF SUBMISSIONS

A. The City of Waltham and/or his/her designees will review submittals concurrently with the Designer and his/her consultants. The Designer and the City of Waltham shall communicate within the aforesaid review period time frame (7 calendar days). The time frame for the Designer's review will not exceed five (5) calendar days between her/his receipt of submittal and contacting the City of Waltham. After the Designer's (and his/her consultant) review, distribution shall be as stated herein.

1. If submittal is 'reviewed - no exceptions taken', or 'reviewed, make corrections noted', all such submittals shall be transmitted to the City of Waltham for concurrence by initialing. The City of Waltham will then return one (1) copy of the submittal for transmittal back to Contractor, who shall then distribute said submittals to appropriate subcontractors, and one (1) copy to the City of Waltham.

2. If submittal is 'reviewed - revise and resubmit' or 'rejected', all such submittals shall be returned to the Contractor for resubmission. A copy of the transmittal, indicating that a submittal was disapproved and returned to the Contractor, will be forwarded from the Designer to the City of Waltham with an additional copy forwarded from the Designer to the City of Waltham, for their records.

3. If a submittal is 'reviewed - no exceptions taken' or reviewed, make corrections noted' by the Designer, or approved as noted by the Designer, but the City of Waltham does not concur, a meeting between the Designer and the City of Waltham will immediately

be established to resolve the impasse. The time frame for the Designer's review will not exceed five (5) calendar days between his/her receipt of submittal and receipt of the Designer's reviewed submittals by the City of Waltham. The City of Waltham will have final authority as to the disposition of the submission. The Designer's position of approval (or disapproval) must be based on the contractual criteria of design intent, function, structure and durability. The City of Waltham's contrary position must also be based on these criteria.

4. The combined review period, for the Designer and the City of Waltham, will not exceed seven (7) calendar days from the established date of each submission indicated on the Schedule of Shop Drawings, Product Data and Samples, plus the additional time, if any, for distribution by the Contractor and receipt of submissions by the Designer and the City of Waltham. The Contractor is required to anticipate review time, including time for possible rejection and resubmission, in establishing Schedule dates.

    a. The aforementioned time provided the Designer for checking shop drawings is from the date of receipt of shop drawings by the Designer to the mailing date of shop drawings returned to the Contractor by the Designer.

5. The Designer will process the submission and indicate the appropriate action on the submission and the transmittal. Incomplete or erroneous transmittals will be returned without action.

6. The Designer will fill out transmittal in the following sequence:
    a. Date received from Contractor.
    b. Date forwarded to the City of Waltham.
    c. Date received from the City of Waltham.
    d. Date returned to Contractor.
    e. Action taken on submission.
    f. Distribution, including number of copies distributed and type of material distributed (i.e., print, brochure or sample, etc.).
    g. Designer's remarks (note major deviations from the Contract Documents).

B. Designer's Review Procedure:

1. Stamped REVIEWED, "NO EXCEPTIONS TAKEN":
    a. No corrections or resubmissions required, fabrication may proceed.

2. Stamped REVIEWED, "MAKE CORRECTIONS NOTED":
    a. If Contractor complies with noted corrections, fabrication may proceed. Submit corrected print for final review.
    b. If, for any reason, the Contractor cannot comply with the noted corrections, fabrication shall not proceed and Contractor shall resubmit, following procedures outlined in this Section.

3. Stamped REVIEWED, "REVISE AND RESUBMIT" OR "REJECTED":

a. Contractor shall revise and resubmit for review. Fabrication shall not proceed.

C. Manufacturer's Instruction

1. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting and finishing, in quantities specified for product data, with two (2) additional copies submitted to the City of Waltham.

D. Certificates of Compliance: Submit certificates of compliance with the associated Shop Drawings, Product Data, and Samples required for the product in quantities specified for certificates of compliance, with two (2) additional copies submitted to the City of Waltham.

E. Field Samples: Provide field samples of finishes at the project as required by individual Specification Section. Install sample complete and finished.

1.8 SCHEDULE OF VALUES

A. Prior to the first request for payment, the Contractor shall submit to the Designer and the City of Waltham, a Schedule of Values of the various portions of the Work in sufficient detail to reflect various major components of each trade, including quantities when requested, aggregating the total contract sum, and divided so as to facilitate payments for work under each Section. The schedule shall be prepared in such form as specified or as the Designer or the City of Waltham may approve, and it shall include data to substantiate its accuracy. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, including breakdown and values, requires the approval of the Designer and the City of Waltham and shall be used only as a basis for the Contractor's request for payment.

1.9 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 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, his fully authorized representatives including the Designer, and their employees and agents form such failure.

1.10 WORK PLAN

A. The Contractor shall submit to the City of Waltham and Designer for review and approval, as a single submittal, a Work Plan, within 10 business days after issuance of the Notice to Proceed. The Plan shall include a detailed description of work activities. The following shall be included:

- Project Schedule of activities and coordination with the City of Waltham
- Mobilization
- Vehicle routing
- Asbestos and Regulated Materials Abatement
- Building Demolition
- Utility Cutoffs
- Final Grading/Landscaping

1.11 WASTE MANAGEMENT PLAN

A. The Contractor shall submit to the City of Waltham and Designer for review and approval, as a single submittal, a Demolition Waste Management Work Plan, within 10 business days after issuance of the Notice to Proceed. Section 017418 provides details on the content of the Plan.

1.12 SUBMITTAL SUMMARY TABLE

A. The following table summarizes the items required for submittal by the Contractor. The list is not intended to be final and or complete, but shall serve as guidance to the Contractor. Please refer to each specific section of the document for specific submittal requirements.

SPECIFICATION SECTION	SUBMITTAL DESCRIPTION

DIVISION 01 – GENERAL REQUIREMENTS	
Section 011000 – Summary of Work	Construction Schedule; Copies of all notifications and permits (for each building) Name and Resume of Project Superintendent; Emergency Contact Phone #; Name and registration # - Massachusetts Register Surveyor; DigSafe notification and response (for each building); DEP approved disposal sites (including all facility permits); Disposal receipts; Subcontractor list; Contractor Safety Officer and safety reports.
Section 013300 Submittal Requirements	Schedule of Values; Project Work Plan; Notification of Health and Safety Plan.
Section 013543 Environmental Protection Procedures	Certified list of non-road diesel powered equipment with emission control devices, including updated monthly reports with additions or deletions to the list.
Section 015000 Temporary Facilities and Controls	DEP approved disposal sites (see Sections 011000 and 017418)
Section 015716 Temporary Pest Control	Pest Control Plan: Contractor License; SDS and manufacturer's application instructions of materials used
Section 017418 Demolition Waste Management and Disposal	Waste Management Plan; Waste Reduction Calculations; DEP approved disposal sites (see Sections 011000 and 017418);
Section 017700 Contract Closeout	At Substantial Completion, a list of items to be completed or corrected; All extended guarantees and warranties as specified.
DIVISION 02 – EXISTING CONDITIONS	

Section 024000 Building & Ancillary Structures Demolition	Demolition Schedule Demolition Plan; Waste Management Plan; Dust Control Plan; Noise Abatement Plan; Disposal receipts.
Section 025000 Asbestos Removal and Related Work	Asbestos Work Plan; Applications of any requested waivers required by various regulatory agencies; Fire Protection Plan; Verification of notification to local emergency personnel, including medical, police and fire departments.
Section 026000 Miscellaneous Hazardous Material Management	Hazardous Materials Management Work Plan; Applications of any requested waivers required by various regulatory agencies; Fire Protection Plan; Verification of notification to local emergency personnel, including medical, police and fire departments
DIVISION 03 - EARTHWORK	
Section 310000 Earthwork	Excavation and Trench Permit; Test Material Reports (soil material proposed for fill and backfill); Performance data for compacting equipment to be used;
Section 311000 Site Clearing	Photographs depicting existing site/surrounding conditions
Section 312500 Earthwork	Material specifications of materials used

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 013543

ENVIRONMENTAL PROTECTION PROCEDURES

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.

1.2 SUMMARY

A. Furnishing all labor, materials, and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operation under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents that which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water, and land, and involves management of runoff, dust, noise and solid waste, as well as other pollutants. Work shall include installing, maintaining, and removing sedimentation and erosion control components within the Limits of Work.

C. Applicable Regulations

D. Submissions

E. Notifications

F. Protection of Groundwater

G. Protection of Streams And Wetlands

H. Protection of Land Resources

I. Protection of Air Quality

J. Maintenance of Pollution Control Facilities During Construction

K. Noise and Vibration Control

L. Diesel Equipment Emission Controls

M. Spill And Discharge Control

1.3 RELATED SECTIONS

A. Section 015000 - TEMPORARY FACILITIES AND CONTROLS:

B. Section 024000 - DEMOLITION:

C. Section 310000 – EARTHWORK

D. Section 311000 - SITE CLEARING:

1.5 APPLICABLE REGULATIONS

A. The Contractor shall comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

B. Fines and related costs resulting from failure to provide adequate protection against any environmentally objectionable acts and corrective action to be taken are the obligations of the Contractor.

C. No material from excavations, stockpiles, or site preparation activities shall be deposited in flood plains or within 100 feet of any body of water or within 100 feet of a wetland boundary or within any buffer zone without compliance under provisions of Chapter 131, Section 40 of the Massachusetts Wetlands Protection Act.

D. All erosion and sedimentation control work shall comply with applicable requirements of governing authorities having jurisdiction. Theses Specifications are not comprehensive, but rather convey the intent to provide complete slope protection and erosion control for both the user agency and adjacent properties until final stabilization of all cover is achieved.

1.6 SUBMISSIONS

A. Construction shall not proceed until the Contractor has submitted a certified list of the non-road diesel-powered construction equipment subject to this specification that either are or will be retrofitted with emission control devices. The list shall include (1) the equipment number, type, make, and Contractor/Sub-Contractor name; and the emission control device make, model, and EPA verification number. Contractors shall also submit a receipt or other documentation from a manufacturer or installer that verifies that appropriate equipment has been installed. The Contractor shall also identify any vehicles that will use Clean Fuels. Equipment that has been retrofitted with an emission control device shall be stenciled or otherwise clearly marked as "Low Emission Equipment".

B. The Contractor shall submit monthly reports, updating the same information, stated in Paragraph A above, including the quantity of Clean Fuel utilized. The addition or deletion of non-road diesel equipment shall be indicated in the report.

1.7 NOTIFICATIONS

A. The City of Waltham may notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements may notify the Contractor in writing, through the City of Waltham, of any non-compliance with State or local requirements. After receipt of such notice from the City of Waltham or from the regulatory agency through the City of Waltham, the Contractor shall immediately take corrective action. Such notice, when delivered to the Contractor or his/her authorized representative at the site of the Work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the City of Waltham may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

PART 2 - PRODUCTS

2.1 WATER

A. Water used for dust control and equipment washes shall be clean and free of salt, oil, and other injurious materials. The Contractor shall provide all necessary water.

2.2 ONSITE SPILL KIT

A. The Contractor shall provide the following minimum equipment to be kept onsite at all times during site work activities for any unexpected spills or discharges:

1. Sand, clean fill and absorbent pillows,
2. Four drums (55 gallon, U.S. DOT 17-E or 17-H),
3. Shovels, and
4. Steam cleaner for decontamination of tools and equipment.

PART 3 - EXECUTION

3.1 PROTECTION OF GROUNDWATER

A. Care shall be taken to prevent, or reduce to a minimum, any discharges to the ground of liquids that may infiltrate to the underlying groundwater. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the groundwater shall not be discharged from the Site. Such waters shall be collected and disposed of by the Contractor in accordance with all applicable Federal, State and local regulations.

3.2 PROTECTION OF STREAMS AND WETLANDS

A. Care shall be taken to prevent, or reduce to a minimum, any damage to any wetland from pollution by debris, sediment or other material. Manipulation of equipment and/or materials in delineated wetland areas is prohibited. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in downstream waters of the State, shall not be discharged from the Site. Such waters shall be collected and disposed of by the Contractor in accordance with all applicable Federal, State and local regulations.

3.3 PROTECTION OF LAND RESOURCES

A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of remediation activities that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to Limits of Work areas shown on the Drawing.

B. Outside of the Limits of Work as shown on the Drawings, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. Snow fence or other approved equal shall be wrapped around tree trunks if heavy equipment has the potential to damage the tree bark, to prevent damage to trees.

C. The locations of storage and other facilities, required in the performance of the Work, shall not be within wetlands or resource areas.

3.4 PROTECTION OF AIR QUALITY

A. Burning – The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control – Maintain all demolition excavations, stockpiles, waste areas, and all other work areas within or without the Limits of Work free from dust that could cause the standards for air pollution to be exceeded (MADEP 310 CMR 7.09.-7.10) and which would cause a hazard or nuisance to others.

C. The Contractor shall provide adequate means for preventing dust caused by construction operations throughout the period of the construction contract. If the City of Waltham or the Designer indicates that the level of dust or odors is unacceptable, the Contractor shall employ measures necessary to reduce dust or odors to an acceptable level.

D. The Contractor shall implement engineering controls (e.g. watering, misting) to control dust whenever required by the Designer or the City of Waltham.

3.5 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. During the life of this Contract, maintain all facilities constructed for pollution, erosion, and sedimentation control as long as the operations creating the particular pollutant area being carried out.

3.6 NOISE AND VIBRATION CONTROL

A. The Contractor shall develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum. Local noise ordinances shall govern.

B. The Contractor shall execute construction work by methods and by use of equipment that will reduce excess noise.

C. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.

D. The Contractor shall manage vehicular traffic and scheduling to reduce noise.

3.7 DIESEL EQUIPMENT EMISSION CONTROLS

A. All motor vehicles and construction equipment shall comply with all pertinent local, state, and federal regulations covering exhaust emission controls and safety.

B. All Contractor and Sub-Contractor diesel-powered non-road construction equipment with engine horsepower (HP) ratings of 50HP and above, which are used on the Project Site for a period in excess of 30 calendar days over the course of the construction period on the Project Site, shall be retrofitted with Emission Control Devices in order to reduce diesel emissions.

C. The reduction of emissions of volatile organic compounds (VOCs); carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment shall be accomplished by installing Retrofit Emission Control Devices.

D. Acceptable Retrofit Emission Control Devices for the Project shall consist of oxidation catalysts or other comparable technologies that are (1) included on the US Environmental Protection Agency (EPA) *Verified Retrofit Technology List* and/or the California Air Resources Board (CARB) *Currently Verified Technologies List*; and (2) are verified by EPA or CARB, to provide a minimum emissions reduction of 50 percent for VOCs, 40 percent for CO and 20 percent for PM. Attainment of the required reduction in PM emissions can also be accomplished by using less polluting Clean Fuels. Verified technologies can be identified on the following websites:

EPA: http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm

CARB: http://www.arb.ca.gov/diesel/verdev/verifiedtechnologies/cvt.htm

E. The emission control equipment can be procured through the Statewide Contract #VEH71 that has fixed costs associated with retrofitting of diesel emission control devices. Pertinent information regarding available vendors, are presented on the following website:

OSD: http://www.comm-pass.com

F. The Contractor shall use methods to control nuisance odors associated with diesel emissions from construction equipment including but not limited to the following: (1) turning off diesel combustion engines on construction equipment not in active use and on trucks that are idling

for five minutes or more; and (2) locating diesel equipment away from the public and sensitive receptors.

G. All costs associated with implementation of the diesel equipment emissions control shall be borne by the respective Contractor or subcontractor and included in their cost for performing the work of the Contract.

3.8 SPILL AND DISCHARGE CONTROL

A. The Contractor shall provide equipment and personnel to perform emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. The collected spill material shall be properly disposed of at the Contractor's expense.

B. Costs to provide the above spill and discharge control materials shall be included in the contract base bid price.

END OF SECTION

SECTION 015000

TEMPORARY FACILITES AND CONTROLS

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 SUMMARY OF SECTION

A. This Section outlines the Contractor's obligations to provide and maintain necessary utilities, security, cleaning, and safe working environment. Additional temporary facilities presented in the Specifications, on the Drawings, shall still apply.

B. This Section addresses the following components of the Project:

1. Temporary Water
2. Weather Protection
3. Temporary Power
4. Heating During Construction
5. Hoisting Equipment and Machinery
6. Staging
7. Maintenance of Access
8. Enclosures
9. Cleaning During Construction
10. Field Offices
11. Sanitary Facilities
12. Construction Barriers
13. Parking
14. Debris Control and Removal
15. Safety Protection
16. Vehicle and Equipment Protection
17. Shoring
18. Construction Entrance

1.3 TEMPORARY WATER

A. The Contractor shall provide all necessary water to the Site. All existing hydrants must remain accessible and in working order during the duration of the project unless the Contractor

receives written approval from the local fire department. No connections to existing hydrants will be made, unless the Contractor receives written approval from the local fire department. If approval is granted, the Contractor shall be responsible for any applicable permits and shall pay for all costs associated with water consumed by himself and by all of his subcontractors. Water usage shall be monitored through the use of meters.

B. The Contractor shall provide an adequate supply of drinking water from approved sources of acceptable quality, satisfactorily cooled, for his employees and those of his Subcontractors.

C. Temporary hoses and temporary pipe lines used for transporting water shall not be run unattended or unprotected across parking areas, parking area entrance, walkways, plazas, or steps. Temporary hoses and temporary pipelines shall not be permitted to be installed along, through or across corridor and occupied rooms or spaces.

D. The Contractor shall provide an adequate supply of drinking water from approved sources of acceptable quality, satisfactorily cooled, for his employees and those of his Subcontractors.

E. Use of the water may be discontinued if, in the opinion of the City of Waltham, it is wastefully used.

1.4 WEATHER PROTECTION

A. It is the intent of these Specifications to require that the Contractor shall provide temporary enclosures and heat to permit construction work to be carried on during the months of November through March in compliance with M.G.L. Chapter 149, Section 44D(G). Under no circumstances shall the Contractor suspend any work during the months of November through March because of their reluctance to provide and pay for temporary weather protection. These Specifications are not to be construed as requiring enclosures or heat for operations that are not economically feasible to protect in the judgment of the Designer. Included in the preceding category, without limitation, are such items as site work, excavation, asbestos abatement, backfilling, and similar operations.

B. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices. Heating devices which may cause damage to finish surfaces shall not be used.

1.5 TEMPORARY POWER

A. The utility company will provide electrical energy required for temporary light and power. The Contractor is required to provide temporary feeders of sufficient capacity from the local utility company, or from the institution power lines, at the point designated on the Drawings, to provide for the electric light and power requirements of the Project during the Project. Payment for energy consumed during construction shall be the responsibility of the Contractor until Final Acceptance has occurred.

B. The Contractor shall pay for the cost of electric energy consumed by himself and by all of his subcontractors. Any temporary wiring of a special nature, shall be paid for by the Subcontractor requiring it, such as:

1. Special circuits required by electric welders, elevators, lifts or other special equipment requiring high-amperage and/or special voltage service, etc.
2. Exterior lighting circuits for protection against vandalism, public warning lights and similar items.

C. The Contractor and all Subcontractors, individually, shall furnish all extension cords, sockets, motors, and accessories required for their work. They shall also pay for all temporary wiring of construction offices and buildings used by them. The Contractor shall pay for the offices of the Contractor and the Resident Engineer specified in the Contract Form.

D. All temporary wiring installed by the Electrical Subcontractor shall be removed after it has served its purpose. Use copper wire only.

E. All relocations of temporary service to meet construction and/or phasing requirements shall be performed at no additional cost to the Commonwealth.

1.6 HOISTING EQUIPMENT AND MACHINERY

A. All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work shall be furnished, installed, operated and maintained in safe condition by the Contractor for the use of all Subcontractors' material and/or equipment delivered to the designated hoisting area except that which is specifically required to be provided by the Subcontractors themselves and is so stated in each appropriately related Section of the Specifications. All costs for hoisting operating services shall be borne by the Contractor unless specifically excepted in the Contract Documents.

B. A licensed equipment manufacturer’s representative shall be present at all times, to witness the erection and dismantling of all hoisting equipment and machinery, whenever such equipment is being erected or dismantled. No such work will be performed without the presence of such representative.

C. Hoisting equipment and machinery erection and dismantling shall be performed only by trained, certified and experienced riggers qualified to perform such work.

D. Copies of such licenses and/or certifications, clearly indicating qualifications, shall be provided to the City of Waltham prior to commencement of such erecting and dismantling work.

E. Review Drawings for hoisting requirements and openness of traffic access routes to installed destinations of specified equipment and furnishings.

1.7 STAGING

A. All staging, exterior and interior, required to be over eight feet in height, shall be furnished and erected by the Contractor and maintained in safe condition by him without charge to and for the use of all trades as needed by them for proper execution of their work, except where specified to the contrary in any filed sub-bid Section of the Specification.

1. Erection and dismantling of staging shall be performed only by trained, certified, and experienced staging personnel qualified to perform such work.
2. Copies of such certifications, clearly indicating qualifications, shall be provided to the City of Waltham prior to commencement of such erecting and dismantling work.

B. Any staging that is up to eight (8) feet in height shall be furnished and erected by the applicable sub-contractor.

1.8 MAINTENANCE OF ACCESS

A. The Contractor shall provide and maintain for the duration of his contract, a means of access to, around and within the site, as indicated on the Drawings, for vehicular traffic and authorized personnel. This means of access shall be construed to sustain the weight of equipment customarily engaged for use in construction projects of this type and magnitude. The Contractor shall, without additional compensation from the Commonwealth, furnish labor and materials as may be required from time to time to maintain this means of access in an acceptable condition as determined by the Designer. Pedestrian access shall provide adequate protection against falling debris, slippage, adequate lighting, warning and directional signs, and protection against construction activities.

B. Clear signage shall be provided directing pedestrians safely around the construction site.

1.9 ENCLOSURES

A. Provide temporary, insulated, weather tight closures of openings in exterior surfaces for providing acceptable working conditions and protection for materials, allowing for heating during construction, and preventing entry of unauthorized persons. Provide doors with self-closing hardware and locks.

B. All utilities including electric ducts, conduits, telephone lines, fire protection, and other utilities shall be protected against damage from construction activity. The Contractor shall be responsible for all damage to the utilities from construction and shall repair all such damage at no additional cost to the City of Waltham.

1.10 CLEANING DURING CONSTRUCTION

A. Unless otherwise specified under the various trade Sections of the Specifications, the Contractor shall perform clean-up operations during construction as herein specified.

B. Control accumulation of waste materials and rubbish; periodically dispose of off-site in a legal manner. The Contractor shall bear all costs, including fees resulting from such disposal.

C. Maintain project in accordance with all local, Commonwealth of Massachusetts, and Federal Regulatory Requirements.

D. Store volatile wastes in covered metal containers, and remove from premises.

E. Prevent accumulation of wastes which create hazardous conditions.

F. Provide adequate ventilation during use of volatile or noxious substances.

G. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on site.
2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.
4. Identify potential sources of cleaning water runoff and propose abatement procedures.

H. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

I. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and windblown debris, resulting from construction operations.

J. Provide on-site containers for collection of waste materials, debris and rubbish.

K. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal dump site (DEP approved).

L. Handle material in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.

M. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.

1.11 FIELD OFFICES

A. The Contractor shall provide and maintain temporary field offices.

B. The Contractor shall provide a suitable field office on site for its own use. The location shall be at the discretion of the City of Waltham.

C. The Contractor shall, on a daily basis, maintain the offices and conference space to be clean, orderly and air conditioned.

I. Refer to paragraph 1.12 for sanitary facilities requirements.

1.12 SANITARY FACILITIES

A. The Contractor shall provide suitable toilet facilities for its staff, the Resident Engineer and the Designer, and additional facilities for the workmen on the job, including personnel of Sub-contractors and Filed Sub-contractors.

B. Provide chemical toilets where work is in progress and in quantity required by OSHA Code.

C. Chemical toilets and their maintenance shall meet requirements of state and local health regulations and ordinances and shall be subject to the approval the Resident Engineer and Designer.

1.14 CONSTRUCTION BARRIERS

A. Proper construction barriers shall be provided around the contract work areas as defined by the Contract Drawings or as directed by the City of Waltham.

B. Construction barriers shall consist of traffic cones, ribbons, tapes, secure fencing, trench covers, wood barriers, warning signs, directional signs and other traffic materials to keep traffic and people from area of construction and maintain ongoing operation.

C. Barriers shall be erected at such approved locations as are necessary, sufficiently cross-braced and supported adequately as required.

1.15 SAFETY PROTECTION

A. At no time shall the work be left unattended without proper safety protection and shall not be left unprotected to the weather and accessible to the public. It is the responsibility of the Contractor to maintain proper safety protection for the public while work is in progress or unattended.

B. No trench may be excavated unless the requirements of sections 40 through 40D of chapter 82, and any accompanying regulations, have been met and this permit is invalid unless and until said requirements have been complied with by the excavator applying for the permit including, but not limited to, the establishment of a valid excavation number with the underground plant damage prevention system as said system is defined in section 76D of chapter 164 (DIG SAFE).

C. Trenches may pose a significant health and safety hazard. Pursuant to Section 1 of Chapter 82 of the General Laws, an excavator shall not leave any open trench unattended without

first making every reasonable effort to eliminate any recognized safety hazard that may exist as a result of leaving said open trench unattended. Excavators should consult regulations promulgated by the Department of Public Safety in order to familiarize themselves with the recognized safety hazards associated with excavations and open trenches and the procedures required or recommended by said department in order to make every reasonable effort to eliminate said safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry.

D. Persons engaging in any in any trenching operation shall familiarize themselves with the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et.seq., entitled Subpart P "Excavations".

E. Excavators engaging in any trenching operation who utilize hoisting or other mechanical equipment subject to Chapter 146 shall only employ individuals licensed to operate said equipment by the Department of Public Safety pursuant to said chapter and this permit must be presented to said licensed operator before any excavation is commenced.

F. A construction fence shall be provided along the entire perimeter of the contract limit lines, and shall be kept in good repair at all times, and shall be arranged to maintain ongoing operation's access and egress.

G. Construction fences shall be six feet high and of chain link, or approved equal, erected in a substantial manner, straight, plumb and true.

H. Gates shall be built into fence at such approved locations as are necessary, well cross-braced and hung on heavy strap hinges with proper post and hook for double gates. Provide heavy hasps and padlocks for each gate. Provide a set of three keys for each lock to the City of Waltham to facilitate emergency access.

I. Fencing shall be removed by the Contractor at no cost to the Commonwealth at such time before final completion as the Designer directs. Restore site to acceptable condition after removing fence.

1.16 PARKING

A. Only during contract working hours and to the extent available, existing parking facilities located at the construction area will be available for use by the Contractor, subcontractors and their employees. Such parking areas shall be designated by the City of Waltham. The Commonwealth shall not be responsible for cars, trucks, etc. or their contents and the Contractor and his Subcontractors and material suppliers will use the designated area with this understanding.

1.17 WASTE CONTROL AND REMOVAL

A. Trash shall not be permitted to accumulate or migrate and the work shall at all times be kept satisfactorily clean. Facility trash receptors shall not be used for the disposal of trash. Dumpster shall be provided by the Contractor for removal of trash for all trades including subtrades.

B. Remove trash from the work site on a daily basis and dispose of same at any (private or public) MassDEP approved dump that the Contractor may choose providing that the Contractor shall make all arrangements and obtain all approvals and permits necessary from the owner or officials in charge of such dumps. Proposed dump site shall be submitted to be approved by the City of Waltham prior to start of demolition. During disposal process, copies of daily receipts from dump site shall be submitted on a regular basis.

C. The Contractor shall remove all debris from the Site on a weekly basis. Waste shall be segregated for recycling. Comply with requirements of Section 017418 - DEMOLITION WASTE MANAGEMENT AND DISPOSAL.

D. Debris shall be legally disposed of in a MassDEP approved disposal site. The site to be used shall be submitted to and approved by the Designer and the City of Waltham 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) to the Designer as evidence of legal disposal. Contractor shall pay the cost of any charges for debris removal.

E. The Contractor shall bear responsibility for maintaining the Site clean and free of debris, leaving all work in clean and proper condition satisfactory to 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 removal of all rubbish, waste, tools, equipment, appurtenances caused by and used in the execution of work.

F. The Contractor shall prevent the accumulation of debris at the construction site, storage areas, parking areas, and along access roads and haul routes.

G. The Contractor shall provide containers for deposit of debris and schedule periodic collection and disposal of debris.

H. The Contractor shall prohibit overloading of trucks to prevent spillage on access and haul routes.

I. The Contractor shall be responsible for proper disposal of all construction debris leaving the Site.

1.18 VEHICLE AND EQUIPMENT PROTECTION

A. All construction activities shall be performed in such a manner so as not to dust, stain or damage any building elements, equipment, vehicles, etc. within general vicinity of the construction work area. Any damage to these items shall be cleaned and repaired at the expense of the Contractor.

1. All construction vehicles and equipment on site shall be effectively disabled and secured when not in use.

1.19 SHORING

A. Provide all temporary shoring and bracing as required for the proposed work. Comply with all applicable codes and standards.

1.20 CONSTRUCTION ENTRANCE

A. The Contractor shall construct a construction entrance at a location to be determined by the City of Waltham. The Contractor shall remove and dispose the construction entrance at the completion of the Project.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 015716

TEMPORARY PEST CONTROL

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. This Section includes development and implementation of a Temporary Pest Control Plan to prevent rodents from being driven out of the project area and into surrounding buildings prior to building demolition under this Contract as designated by the Engineer. Work must be in accordance with Massachusetts Pesticide Control Act (MCPA, Chapter 132B of the Massachusetts General Laws).

1.3 APPLICABLE REGULATIONS

A. The Contractor shall comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement

1.4 SUBMITTALS

A. Pest Control Plan

1. A written plan, outlining sequence of activities, including control techniques to be used (by species), personnel, equipment and material, schedule, safety measures, and personal protective equipment. Plan shall be focused on rodent control. Specify mechanical traps to be used. Include proposed disposal methods and methods of protection for people and non-target species.

B. Licenses and Permits

1. Copy of all licenses and permits required to perform the described project using the proposed control techniques. Contractor is responsible for all required notifications.

C. Pesticide Information

1. Copy of most recent EPA labels for each rodenticide, fumigant or other pesticides to be used along with related safety data sheets (SDS).

D. Manufacturer's printed application instructions for the approved rodenticide, fumigant or other pesticides.

1.5 LIABILITY

A. The Contractor shall be liable for death or injury to persons or domestic animals in the use of the toxicants and shall determine the appropriate material from the materials list for each treatment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Rodenticides, Fumigants and Pesticides

1. Rodenticides, fumigants and pesticides shall only be used in compliance with federal and state laws and regulations.

2. Rodenticides, fumigants and pesticides shall not be accessible to children, pets and non-target animals.

3. All spoiled and any unused bait shall be disposed of as specified on the product label.

4. Any area where rodenticides, fumigants and pesticides is used must be posted in accordance with 333. CMR 131.03 (19).

B. Mechanical Devices

1. Mechanical devices, such as traps, can be used where possible.

2. Lethal traps should be placed inside stations or other protective covering to prevent non-target birds and other animals from being injured or killed.

PART 3 - EXECUTION

3.1 APPLICATION

1. Implement approved rodent control plan and in accordance with the manufacturer's standard recommended practice

2. All spoiled and any unused bait shall be disposed of as specified on the product label.

3. Any area where rodenticide, fumigant or pesticide is used must be posted in accordance with 333 CMR 13.03 (19) and other applicable state or federal regulations.

END OF SECTION

SECTION 017418

DEMOLITION WASTE MANAGEMENT AND DISPOSAL

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 SUMMARY

A. This Section includes administrative and procedural requirements for recycling and disposing of demolition waste.

B. Definitions

C. Performance Requirements

D. Submittals

E. Quality Assurance

F. Demolition Waste Management Plan

G. Demolition Waste Plan Implementation

H. Salvaging Demolition Waste

I. Recycling Demolition Waste

J. Disposal of Waste

1.3 RELATED SECTIONS

A. Section 013300 – SUBMITTAL REQUIREMENTS:
   1. Base requirements for submissions.

B. Section 013543 - ENVIRONMENTAL PROTECTION PROCEDURES:
   1. Environmental-protection measures during demolition.

C. Section 024000 – BUILDING AND ANCILLARY STRUCTURES DEMOLITION:
   1. Demolition activities.

1.4 DEFINITIONS

A. Asphalt Pavement, Brick, and Concrete (ABC) Rubble: Rubble that contains only weathered (cured) asphalt pavement, clay bricks and attached mortar normally used in construction, or concrete that may contain rebar. The rubble shall not be mixed with, or contaminated by, another waster or debris.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.5 PERFORMANCE REQUIREMENTS

A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.

B. Salvage/Recycle Requirements: Salvage and recycle as much non-hazardous demolition and construction waste as possible including, but not limited to the following materials:

   1. Asphaltic concrete paving.
   2. Concrete and concrete reinforcing steel.
   3. Brick and concrete masonry units.
   4. Coated brick, concrete, and concrete masonry units. Coatings shall include, but not be limited to: paint, stucco applications, plaster, etc..
   5. Wood studs, wood joists, plywood, oriented strand board, paneling and trim.
   6. Casework and cabinetry.
   7. Structural steel, miscellaneous steel and rough hardware.
   8. Roofing.
   9. Insulation.
   10. Doors, door frames and door hardware.
   11. Windows, glass, plastic, and glazing.
   12. Metal studs.

13. Gypsum board.
14. Acoustical tile and panels.
15. Equipment.
16. Plumbing fixtures, piping, supports, hangers, valves, and sprinklers.
17. Mechanical equipment and refrigerants.
18. Electrical conduit, copper wiring, lighting fixtures, lamps, and ballasts.
19. Electrical devices, switchgear, panelboards, and transformers.

C. In the event the Contractor encounters previously unidentified material that is reasonably believed to be hazardous, asbestos containing, coated with lead-based paint, or oily debris, the Contractor shall immediately stop work in the affected area and report the condition to the Designer and the City of Waltham. At no time shall such material be handled or disposed of by the Contractor. The Contractor agrees to cooperate with the City of Waltham and any consultants engaged by the City of Waltham to perform services with respect to the analysis, detection, removal, containment, treatment, and disposal of such regulated materials.

1.6 SUBMITTALS

A. Demolition Waste Management Plan (DWMP): Submit for approval 3 copies of plan within 20 calendar days of date established for the Notice to Proceed, in a format acceptable to the City of Waltham.

B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

C. Waste Reduction Calculations: Before submitting a request for Substantial Completion, submit three copies of calculated final rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Facility Permitting Information: For disposal and incinerator facilities provide a copy of the facility's current solid waste management facility permit in accordance with 310 CMR 19.000, prior to the start of construction.

E. Facility Permitting Information: For off-site ABC rubble crushing and/or recycling facilities, provide a statement, prior to construction, from the facility that references its specific exemption from the solid waste regulations (per 310 CMR 16.05 (3) (e)) or provide a copy of the facility's current solid waste management facility permit in accordance with 310 CMR 19.000.

F. Record Keeping for Recycling and Landfill and/or Incinerator Disposal: Documentation to be submitted by the Contractor shall include the following as a condition of each payment:

1. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, and/or receipts.
2. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, and/or receipts.

G. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

H. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction, including but not limited to, Massachusetts solid waste regulations contained in 310 CMR 16.00 and 310 CMR 19.000.

1.8 DEMOLITION WASTE MANAGEMENT PLAN

A. General: Develop and submit plan for approval, consisting of waste identification, and waste reduction, handling, transportation and recycling/disposal procedures. Include separate sections in plan for recycling and disposal of demolition waste. Indicate quantities by weight throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition and site-clearing waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Program: List each type of waste and whether it will be recycled or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
3. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses and telephone numbers.

D. Handling and Transportation Procedures: Include methods that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location(s) on Project site where materials separation will be located.

E. Waste Management Coordinator: Identify Contractor employee who will be the Waste Management Coordinator for the project. The Waste Management Coordinator will be responsible for implementing, monitoring, and reporting status of waste management work plan.

PART 2- PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DEMOLITION WASTE PLAN IMPLEMENTATION

A. General: Implement Waste Management Plan as approved by the Designer. Provide containers, storage, signage, transportation, and other items as required to implement WMP for the entire duration of the Contract.

B. The Contractor shall conduct a Waste Management Meeting at the Site. The Contractor shall review methods and procedures related to waste management including, but not limited to, the following:

1. Distribute approved WMP to everyone concerned within three days of approved submittal return.
2. Clearly identify the Waste Management Coordinator and explain the Coordinator's responsibilities.
3. Review WMP with each trade when they first begin work on-site. Review plan procedures and locations established for recycling and disposal.
4. Review and finalize procedures for material separation and verify availability of containers and bins needed to maintain production.
5. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
6. Provide recycling educational literature for all workers, subcontractors and suppliers engaged in on-site activities.
7. Provide appropriate recycling signage for containers and workspaces.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, sold, and disposed.
2. Comply with project requirements for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Sale and Donation: Sale activities are not permitted on Project site. Labor for loading donated items acceptable to local trade practices; union labor if applicable

3.3 RECYCLING DEMOLITION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Receivers and Processors: Available recycling receivers and processors include, but are not limited to, those listed in the Massachusetts Recycling Directory, available from the Massachusetts State Bookstore (617-727-2834) located in the Massachusetts State House, for recycling operations within the Commonwealth of Massachusetts.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical. For waste which cannot be separated at Project site, co-mingle only with waste which is to be separated later at a recycling facility. Contamination of recycling containers with trash or other contaminants will be addressed by the Contractor and who will be solely responsible for payment of all fines and penalties.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off site property and transport to recycling receiver or processor.

D. On-site crushing of non-coated asphalt pavement, brick, and concrete (ABC) rubble as described in 310 CMR 16.05, is allowed, provided performed in accordance with 310 CMR 16.05. On-site crushing of coated ABC waste is allowed provided performed in accordance with the BUD submission to the MA DEP. If on-site crushing of coated ABC waste is not performed then the waste must be transported off-site to an asphalt batching plant or to an ABC crushing or recycling operation that is either conditionally exempt from 310 CMR 16.00 or has been sited and permitted in accordance with 310 CMR 16.00 and 310 CMR 19.000, respectively.

3.4 RECYCLING DEMOLITION WASTE

A. Asphaltic Concrete Paving: With the exception of paving debris to be crushed on-site, break up and transport paving to asphalt-recycling facility.

B. Concrete: With the exception of concrete debris to be crushed on-site, deposit all debris in designated container to be transported to approved aggregate recycling facility to be crushed and screened for use as satisfactory soil for fill or sub-base.

C. Masonry: With the exception of masonry debris to be crushed on-site, deposit all masonry debris in designated container to be transported to approved aggregate recycling facility to be crushed and screened for use as satisfactory soil for general fill or satisfactory soil for fill or sub-base. Clean and stack undamaged whole masonry units on wood pallets for reuse.

D. Wood Materials: Sort and stack salvageable members according to size, type, and length. Separate lumber waste and deposit into appropriate container. Separate engineered wood products, panel products, and treated wood materials into designated containers.

E. Metals: Separate metals by material type if practical. Stack salvageable structural steel members according to size, type of member, and length.

F. Asphalt Shingle Roofing: Organic and glass-fiber asphalt shingles and felts shall be disposed of at a facility permitted by Massachusetts Department of Environmental Protection (DEP) to process post-consumer (used) asphalt shingles. Recycle nails, staples acceptable, flashing trim and accessories as metals.

G. Glass: Deposit glass debris into designated containers to be transported to approved glass recycling facility.

H. Plastics: Deposit plastic containers and debris into designated containers to be transported to approved plastic recycling facility.

I. Gypsum Board: Deposit scraps of gypsum board into designated container protected from weather and transport to appropriate gypsum recycling facility to be processed into soil amendment.

J. Acoustical Ceiling Panels and Tile: Deposit pulp able mineral fiber panels into designated container protected from weather and prepare for transport, as directed by manufacturer, to appropriate recycling facility to be processed into new acoustic ceiling panels. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.

K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips. Store clean, dry carpet and pad in a closed container or trailer provided by carpet reclamation agency or carpet recycler.

L. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

M. Plumbing Fixtures: Separate by type and size fixtures suitable for reuse. Deposit all other fixtures into designated containers by material type to be transported to approved recycling facility.

N. Piping: Separate piping materials by material composition. Deposit in designated containers. Separate supports, hangers, valves, sprinklers, and other components by material type and deposit in designated containers for transport to approved recycling facility.

O. Lighting Fixtures: Separate lamps by type and protect from breakage.

P. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

Q. Conduit: Deposit conduit and fittings into designated container.

3.5 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. For solid waste disposal facilities located in the Commonwealth of Massachusetts, dispose of materials only in facilities which currently comply with applicable state regulations, including requirements of 310 CMR 16.00 {Site Assignment for Solid Waste Facilities} and 310 CMR 19.000 {Solid Waste Management}, and local bylaws.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

SECTION 017700

CONTRACT CLOSEOUT

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 THE WORK

A. Final Cleaning

B. Closeout Requirements and Submittals

C. Guarantees and Warranties

1.3 RELATED SECTIONS

A. The following items are not included in this Section and will be performed under the following designated Section:

1. Section 013300 – SUBMITTAL REQUIREMENTS: for base requirements for submissions.
2. Section 015000 – TEMPORARY FACILITIES: Management of debris from the Project.

1.4 FINAL CLEANING

A. Unless otherwise specified under the various Sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.

B. Maintain project site free from accumulations of waste, debris, and rubbish, caused by operations. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces and leave project clean.

C. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

D. Exterior paved surfaces are to be cleaned by a mechanical sweeper (i.e. street sweeper) and

rake clean other surfaces of the grounds.

E. At the end of the project, Contractor and each Subcontractor shall remove all his tools, equipment, machinery, and surplus materials from the job site. The Contractor shall remove all waste materials and rubbish from the project at this time. All temporary structures shall be removed and the project shall be left clean.

1.5 CLOSEOUT REQUIREMENTS AND SUBMITTALS

A. Procedural Requirements Prior to Substantial Completion: Punch List:

1. During the finishing stages of the project, the Contractor shall make frequent inspections with subcontractors, the Designer, and the City of Waltham, so as to progressively check for and correct faulty work.

2. During the course of construction of the project, the Contractor shall procure and maintain test records and certificates that will be required prior to substantial completion.

3. When the Contractor determines that he/she is Substantially Complete*, he/she shall prepare for submission to the Designer a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with contract Documents.
   *NOTE: Substantially Complete means that less than one percent (1%) of all contract work, including change orders, remains to be done, and that none of the remaining work will affect health, safety, or function.

4. Upon receipt of the Contractor's list of items to be completed or corrected, the Designer will promptly make a thorough inspection, together with representatives of the City of Waltham and prepare a "punch list", setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable.

5. When the punch list has been prepared, the Designer will arrange a meeting with the Contractor and subcontractors, and the City of Waltham, to identify and explain all punch list items and answer questions on the Work that must be done before Final Acceptance.

6. The Contractor shall immediately correct all punch list items that affect health, safety or function, as determined by the Designer

7. Following the completion of punch list items noted in 1.7(A)(6), the Contractor shall cause the completion of all of the other punch list items within the timeframe required.

8. If the Contractor fails to pursue completion of the remaining monetized punch list work, on a continual basis, within the timeframe required by the certificate, the City of Waltham may, after seven (7) calendar days written notice, elect to complete the work with separate forces and charge the work against the Contractor.

1.6 GUARANTEES AND WARRANTIES

A. Submit to the Designer all extended guarantees and warranties that have been specified in various, individual Sections of the Specifications. Guarantees shall be assembled by Specification No. and Section in accordance with Specifications Table of Contents.

1. Guarantees and warranties shall be enforceable in the Commonwealth of Massachusetts and subject to interpretation in accordance with the laws of the Commonwealth of Massachusetts.

B. Unless more stringent requirements are otherwise specified, guarantee all work against defects of materials, equipment and workmanship for one year from the date of Completion.

C. If, within any guarantee period, repairs or changes are required in connection with guaranteed work, Contractor shall promptly upon receipt of notice from the City of Waltham, and without additional expense to the City of Waltham, within ten days:

1. Place in satisfactory condition in every particular all guaranteed work and correct all defects.

D. If Contractor, after such notice, fails to proceed immediately to comply with terms of guarantee, the City of Waltham may correct defects and hold Contractor liable for all expenses incurred.

E. Promptly after completion of the work, obtain from each subcontractor where a guarantee is required, a warranty addressed to and in favor of the City of Waltham or the User Agency if directed by the City of Waltham.

F. Delivery of any warranty required does not relieve the Contractor from any obligation assumed under other provisions of the Contract.

G. Deliver guarantees and warrantees to the Designer before or with the application for Final Payment.

H. The general warranty set forth in the General Conditions is in addition to, exclusive of, and not in substitution of such guarantees as may be required in the Specifications.

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. Asbestos and hazardous materials survey reports are included in Attachments.

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. "Lead-based paint" was identified within the Shriver and CERC buildings on the metal ladder in the 4th floor mechanical room to the left of the rear elevator, on the vinyl baseboards along the staircase treads and risers, and on the basement boiler. 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.

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. 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.

10. 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.

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

12. 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 017000 - CONTRACT CLOSEOUT

3. Section 025000 - ASBESTOS REMOVAL AND RELATED WORK

4. Section 028100 MANAGEMENT AND DISPOSAL OF WASTE STREAMS

5. Section 310000 – EARTHWORK

6. 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)

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. 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, and management of waste streams, including segregation and handling of asbestos-containing materials and other

hazardous and non-hazardous materials.

2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.

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

4. 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

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. 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, 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, and Section 026000.

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

14. 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.

15. 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. 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 017000 — CONTRACT CLOSEOUT.

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 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. If part of the work is to be performed in the winter months, the Contractor shall be responsible for snow removal as necessary for the removal of asbestos-containing window caulking and glazing materials and other ACM and PCAM.

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 MassDOS 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 attached Environmental Reports for each Building. (See Appendices)

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 as well as bathroom facilities during the abatement period. Water is available at the Site, but not inside the site buildings. Refer to Section 015000 for procedures and costs relating to sanitary facilities, temporary power and temporary water.

1.5 AUTHORITY TO STOP WORK

A. The City of Waltham has the authority to stop the work at any time the City of Waltham determines either personally or through the services of the City of Waltham's Asbestos Monitor or the Consultant that conditions are not within the specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the 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. The 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 the 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 the City of Waltham or the Consultant.

D. The absence of a stop work order by the City of Waltham or the 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. The 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 MassDOS 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 MassDOS as an Asbestos Supervisor or Asbestos Worker.

1.08 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 the City of Waltham, 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 the 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 City of Waltham 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. 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 MassDOS. 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.

E. Sample literature for proposed disposable protective clothing to be used on this Project.

F. 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.

G. Certification of compliance with OSHA requirements including but not limited to medical surveillance, record keeping and personal monitoring.

H. Documentation of certification in accordance with 453 CMR 6.00 for each employee.

I. Final landfill destination(s) and copies of transporter and Landfill permits as well as Waste Shipment Records

J. Copies of all Notifications made to Massachusetts Asbestos Program, Local Board of Health, Local Fire Department, and any other agencies, as required.

K. 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 prefilters 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 noncarcinogenic. 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 facepiece 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 MassDOS 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 City of Waltham. 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, the City of Waltham, and the Contractor.

B. The Contractor shall submit to the City of Waltham 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 effect normal facility operations.

D. The Contractor shall make all required notifications and obtain all permits including, but not limited to MassDEP, MassDOS, 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 City of Waltham 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 precleaning/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 the City of Waltham of all preparation work and containment areas before commencing asbestos removal. The City of Waltham shall be given at least 48 hours notification of the intent to start removal work in any work area.

C. 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 City of Waltham.

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 City of Waltham. 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 the City of Waltham's Asbestos Monitor. No removal or disturbance of asbestos-contaminated materials or systems is to occur until the City of Waltham's Asbestos Monitor 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 City of Waltham.

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 City of Waltham.

B. The interior of the North Branch Library is to be managed as ACWM due to the presence of ACM ceiling texture debris. 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. 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, floor tile under carpet, 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 are present within the North Branch Library. Current building conditions were noted as having 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, 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 plaster, b) 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 textured paint, 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.

2. The Abatement Schedule identifies quantities of accessible TSI piping, general locations and general work environment description within the North Branch Library. 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 City of Waltham's Asbestos Project Monitor, 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 the 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 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.

K. 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 the City of Waltham's Asbestos Project Monitor. The Contractor shall inform the City of Waltham 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 the 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.

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 the 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, the City of Waltham's Asbestos Monitor shall inspect the work area. To facilitate scheduling of inspections and air tests, the Contractor shall notify the 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 the 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 City of Waltham's Asbestos Project Monitor, 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 the 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 the City of Waltham.

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 the City of Waltham's Asbestos Monitor. The Contractor is responsible for personnel monitoring in compliance with OSHA regulations. The City of Waltham's Asbestos Monitor may, at his discretion, also conduct personnel monitoring on Contractor personnel. Monitoring by the 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 the 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 Contractor shall provide cooperation and support to the 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 the City of Waltham's Asbestos Monitor.

D. Final Clearance air sampling will be performed by Phase Contrast Microscopy in accordance with MassDOS 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 the 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 the 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,

the 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. The 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 the 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 the 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 the 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 the 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 the 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 brick façade(s) of the Kelly, CERC, and Shriver buildings and dispose of the material as PCB Bulk Product Waste. All CMU associated with the CERC 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 CERC and Shriver buildings 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 024000: BUILDING AND ANCILLARY STRUCTURES DEMOLITION

3. Section 028100: MANAGEMENT AND DISPOSAL OF WASTE STREAMS

4. 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 026000

MISCELLANEOUS HAZARDOUS MATERIALS REMOVAL

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

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

1.2 DESCRIPTION OF THE WORK

A. The Contractor shall provide labor, materials, and equipment to complete the work specified in this Section including, but not limited to, the removal and lawful disposal of hazardous materials, hazardous wastes, and special wastes. Generally, the management of miscellaneous hazardous materials shall include, but not be limited to:

1. Characterization (any testing that may be required by a disposal facility), removal, and disposal of hazardous materials or potentially hazardous materials.

2. Characterization (any testing that may be required by a disposal facility), removal, and disposal of fluorescent light ballasts, capacitors, and transformers throughout all site buildings and structures to be demolished.

3. Characterization (any testing that may be required by a disposal facility), removal, and disposal of building systems fluids, containerized wastes, contained gear oils, hydraulic oils and refrigeration liquids, etc. from various pieces of machinery and equipment, throughout all site buildings and structures to be demolished.

4. Characterization (any testing that may be required by a disposal facility), removal, and disposal of all containers, drums, and unknown materials throughout all site buildings and structures to be demolished.

5. Characterization (any testing that may be required by a disposal facility), removal, and disposal of loose paint chips and flaking and peeling paint from walls and floors throughout all site buildings and structures to be demolished.

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

7. Perform all sampling and testing required to properly profile the material for waste disposal. This shall also include all testing required by the disposal or recycling facility.

8. All costs for the testing shall be borne by the Contractor.

9. Comply with the Contractor's submitted Health and Safety Plan.

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

1. Section 017418 – DEMOLITION WASTE MANAGEMENT AND DISPOSAL
2. Section 024000 – BUILDING AND ANCILLARY STRUCTURES DEMOLITION
3. Section 025000 – ASBESTOS ABATEMENT AND RELATED WORK

C. Refer also to the attached hazardous materials inventory for information related to hazardous materials that are/may be present and require removal prior to demolition.

1.3 SCHEDULING AND SEQUENCING

A. The Contractor and the Consultant shall develop a hazardous materials removal schedule for each phase of the work at the Pre-Construction Conference. The Consultant or the City of Waltham may choose to alter the work sequence as they see fit.

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

1.4 LOCATION OF WORK

A. Location of work areas, descriptions, estimated types and quantities of hazardous materials are described in the HAZARDOUS WASTE SCHEDULE appended hereto. If additional hazardous materials are encountered, the Contractor shall notify City of Waltham immediately and be prepared to remediate the material.

B. The HAZARDOUS WASTE SCHEDULE identifies hazardous materials encountered and enumerated during the survey. The quantities are provided for general guidance and may not correspond exactly to the quantity to be removed. The Contractor is responsible to investigate all structures for the presence of all hazardous materials. The

Contractor shall determine quantities of hazardous materials for bidding purposes. Not all hazardous materials, building systems fluids and containerized wastes are included in the Hazardous Materials Inventory Table. The Contractor is responsible for field verification, removal, and proper disposal of all items prior to building demolition.

C. Handling, containerizing, packaging, re-handling, hauling and disposal of all items identified are to be included in the lump sum bid item of the Contract.

1.5 REFERENCES

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

1. Code of Federal Regulations

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

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

c. 29 CFR 1910.134, “Respiratory Protection”

d. 29 CFR 1910.146 “Permit Required Confined Space”

e. 29 CFR 1910.1025 “Lead”

f. 29 CFR 1910.1200, “Hazard Communication”

g. 29 CFR 1926, “Safety and Health Regulations for Construction” (Construction Industry Standards)

h. 29 CFR 1926.62, “Lead-Construction”

i. 40 CFR 50, “National Primary and Secondary Ambient Air Quality Standards”

j. 40 CFR 60, “Standards of Performance for New Stationary Sources,” Appendix B, “Test Methods”

k. 40 CFR 117, “Determination of Reportable Quantities for Hazardous Substances”

l. 40 CFR 122, “EPA Administered Permit Program: The National Pollutant Discharge Elimination System”

m. 40 CFR 172, "Hazardous Waste Transportation"

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

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

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

q. 40 CFR 268, "Land Disposal Restrictions"

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

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

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

3. National Institute for Occupational Health and Safety

   a. NIOSH Method 7082, "Lead"

4. American Society for Testing and Materials

   a. ASTM D3335, "Test Method for Low Concentration for Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy"

5. EPA (Environmental Protection Agency) Publications

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

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

6. Steel Structures Painting Council

   a. SSPC Guide 61 (CON) Guide for Containing Debris Generated During Paint Removal Operations

   b. SSPC Guide 71 (DIS) Guide for the Disposal of Lead Contaminated Surface Preparation Debris

7. Commonwealth of Massachusetts Department of Environmental Protection

   a. 310 CMR 40 Massachusetts Contingency Plan

   b. 310 CMR 30 Hazardous Waste Regulations

c. 310 CMR 1-7 Clean Water Act

d. 310 CMR 16, 19 Solid Waste Regulations

e. 314 CMR 7-8 Clean Air Act

8. Other

a. 454 CMR 10-23 Division of Industrial Safety

1.6 SUBMITTALS

A. The Contractor shall submit each item in this Article according to the Conditions of the Contract, for information only, unless otherwise indicated.

B. The Contractor shall submit a Waste Management Plan for review by the Consultant and City of Waltham. The Plan shall include identification of the proposed waste hauler and disposal facility with copies of all applicable licenses, registrations and approvals.

C. The Contractor shall provide copies of all worker certifications associated with OSHA 40 Hour Hazardous Waste Site Health and Safety Training in accordance with 29 CFR 1910.120.

D. The Contractor shall provide City of Waltham with all required documentation relating to the proper removal and disposal of any hazardous or regulated waste that leaves the site in accordance with the Waste Management Plan.

E. After completion of the hazardous materials removal, provide a final report documenting removal, transportation and disposal activities. The document shall include copies of manifests, shipping slips, permits, and licenses for this Project.

1.7 QUALITY ASSURANCE

A. Examination of Existing Conditions: The Contractor shall examine the Contract Drawings for hazardous waste identification, handling, removal, and disposal requirements and provisions for new work.

B. Hazardous Waste Removal and Transportation Firm Qualifications: An experienced firm that has specialized in hazardous waste work similar in material and extent to that indicated for this Project.

C. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

D. Regulatory Requirements: Comply with governing EPA and DEP notification regulations before beginning removing any hazardous waste materials. Comply with hauling and disposal regulations of authorities having jurisdiction

PART 2 – MATERIALS

2.1 PROTECTIVE EQUIPMENT

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

2.2 DISPOSAL BAGS

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

2.3 DRUMS

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

2.4 LABELS

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

PART 3 – EXECUTION

3.1 GENERAL WORK AREA SET UP

A. Signage: Prior to the preparation for work that will disturb hazardous materials, the Contractor shall place warning signs immediately outside all entrances and exits to the area.

B. Access to Work Areas: The Contractor shall allow only authorized personnel into the work area. Barrier tape shall be used to limit access to the exterior work area.

3.2 GENERAL HAZARDOUS WASTE MANAGEMENT

A. Do not mix potentially hazardous waste streams. Where feasible, separate each type of hazardous waste from other types of hazardous wastes, from asbestos waste and from construction waste.

B. Segregate, package, label, transport and dispose of Hazardous Waste in accordance with DOT, EPA, State and Local regulations.

C. The Consultant shall identify materials considered to be hazardous wastes prior to

initiating this project. A schedule of materials that must be managed as hazardous waste is attached in Table 2.

D. The following wastes are designated as Hazardous Wastes and are non-salvageable:

1. Waste Type A PCB waste to include PCB-containing ballasts from fluorescent light fixtures.

2. Waste Type B Mercury-containing waste to include thermostats and temperature gages with mercury switches, fluorescent, and mercury-vapor lamps.

3. Waste Type C lead base paint debris to include containers of paint and paint chips/debris.

4. Waste Type D characteristically hazardous metal containing waste to include soot, ash and debris inside the boilers.

5. Waste Type E HVAC and refrigerator refrigerant.

E. In the event of an apparent conflict between the requirements of these specifications and the requirements of the Massachusetts Hazardous Waste Regulations (310 CMIR 30.000) the Contractor shall bring the apparent conflict to the attention of the Consultant for resolution. The Contractor shall not seek to review the apparent conflict with other parties prior to resolution with the Consultant.

3.3 HAZARDOUS WASTE PACKAGING AND LABELING

A. Package each segregated Hazardous Waste Type A, B, C, D and E in separate specified containers as follows. IMPORTANT: **Do Not Mix Waste Streams:**

1. Waste Type A to be packaged in DOT 17-H open-top drums. Fill to capacity only with Waste Type A (Do Not Mix Waste Stream types). Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Waste Polychlorinated Biphenyls, 9, UN-2315, PG-II, (M00l). Adjacent to each label, enter the date indicating when waste was first placed in each drum.

2. Waste Type B to be packaged in DOT 17-H open-top drums with polyethylene disposal Bag liners. Fill liner bags only with Waste Type B (do not mix waste stream types). After full, neck liner bags down into DOT 17-H open-top drum and seal with duct tape. Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Hazardous Waste Solid, NOS, 9, NA3077, PG-III, (D009). Adjacent to each label, enter the date indicating when waste was first placed in each drum.

3. Waste Type C to be packaged in DOT 17-H Open-Top Drums. Fill to capacity only with Waste Type C (do not mix waste stream types). Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Hazardous Waste Solid, NOS, 9, NA3 077, PG-III, (~D009). Adjacent to each label, enter the date indicating when waste was first placed in each drum.

4. Waste Type D to be packaged in DOT 17-H open-top drums. Fill to capacity only with Waste Type D (do not mix waste stream types). Install gasket on lid, apply lock ring, and seal. Apply Hazardous Waste Label to drum side. Enter DOT Shipping Data as follows: RQ Hazardous Waste Solid, NOS, 9, NA3077, PG-III, (D009). Adjacent to each label, enter the date indicating when waste was first placed in each drum.

5. For Waste Type E, HVAC, cooling system fluids, and refrigerator refrigerant shall be reclaimed for recycling from each unit by an EPA licensed contractor. The refrigerant shall be reclaimed using evacuation gas containers and submitted for recycling in accordance with the EPA Clean Air Act, Stratospheric Ozone Protection Regulations.

B. Maintain all containers in a continuously sealed condition after they have been filled. Do not reopen sealed containers or place additional waste in previously sealed containers.

3.4 LIGHT BALLASTS

A. Light ballasts requiring removal were observed throughout the Site.

B. Remove, characterize and lawfully dispose to an appropriate off-site PCB disposal facility all PCB and non-PCB light ballasts throughout the facility. In preparing his/her bid, the Contractor shall assume all light ballasts contain PCBs.

C. Document all disposal activities to insure compliance with regulations. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

D. All light ballasts shall be removed by properly trained personnel in accordance with local, state, and federal regulations and all material shall be disposed of (i.e. recycled) by a disposal contractor who possesses at least one (1) year experience in the “Lighting Waste Recycling Industry”.

3.5 MERCURY

A. Under current federal regulations, items containing mercury may be classified as hazardous waste. These include, but are not limited to fluorescent lamps, high-intensity

discharge lamps, manometer thermostats and relay switches. The following shall be followed for disposal of all mercury items:

1. Collection, characterization and proper disposal of all fluorescent tubes and mercury items found throughout the facility.

2. Care must be taken to not break these items, as that may cause mercury exposure to individuals handling them and may require additional clean-up and decontamination.

3. All materials leaving the site shall become the property of CONTRACTOR.

4. Provide all waste shipment records or recycling records and incorporate in the final report.

3.6 HAZARDOUS MATERIALS/CONTAINERIZED WASTE

A. All hazardous materials shall be characterized and disposed of in accordance with applicable regulations. Disposal manifests shall be provided for all waste disposal.

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

C. Any hazardous materials containers in poor condition shall be removed as soon as possible.

D. Handling Hazardous Waste

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

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

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

4. Accurately measure and weigh the volume of each container or load of waste removed from the site. Submit records of waste volumes to City of Waltham and the Consultant.

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

6. Paint debris shall not be placed on the unprotected ground and shall be shielded to prevent dispersion of the debris by wind or precipitation.

7. Provide appropriate notifications to regulatory agencies if there is a release to the environment exceeding the CERCLA reporting requirements (e.g. lead - 1 pound).

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

9. Provide legal transportation of the waste to the disposal landfill, and complete or obtain all required licenses, manifests, landfill slips, or other forms. Copies of all forms or licenses, and the signed original of the Waste Manifest for each waste load, shall be given to the Consultant and City of Waltham.

3.7 LEAD-BASED PAINT

A. Lead-based paint is present on many surfaces throughout the Site. The Contractor shall assume that all painted surfaces contain lead-based paint. Any of the Contractor activities that may generate leaded dust or impact a leaded surface shall be responsible for regulating his work area so that dust migration is contained properly within the regulated area. Once the work is complete, the Contractor shall be responsible for the proper clean up and disposal of leaded dust and materials.

B. All lead based paint work must be reflected in the lump sum bid of this contract.

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

1. No torch cutting, mechanical sanding or stripping or abrasive methods shall occur on painted surfaces without the use of HEPA vacuum attachments.

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

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

4. Worker protection, at a minimum, shall comply with the OSHA Lead Standard 29 CFR 1926.62. Worker Right to Know and Health and Safety Standards of 1926.62 shall also apply to the work of this Section.

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

6. Cleanup Activities: The Contractor shall maintain the demolition work zones free of accumulated debris and materials containing lead.

G. Disposal of Lead Contaminated Material.

1. The Contractor must comply fully with SSPC – Guide 71 (DIS) as well as all current regulations concerning the testing, handling, hauling, labeling, and disposal of all lead paint waste generated during this project.

a. At a minimum, the Contractor shall collect and submit samples for Toxicity Characteristic Leaching Procedure (TCLP) Method 1311 in accordance with Appendix II of 40 CFR 261 to a Massachusetts Certified Laboratory. The Contractor shall collect at least four samples from each media scheduled for disposal.

b. All painted or coated building components shall be disposed of off site, including brick and concrete.

c. All visible paint and painted debris shall be removed from the ground within and surrounding the work site prior to building demolition. All material shall be properly disposed of off-site.

d. Lead-containing material that exceeds the TCLP criteria shall be disposed in accordance with applicable hazardous waste regulations.

3.8 REFRIGERANT

A. Collect and analyze refrigerant samples, as necessary, to identify system gases from all refrigerant-containing vessels and systems. These systems include, but are not limited to, HVAC systems, air conditioners, refrigerators, and water coolers.

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

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

D. After removal of refrigerants, tanks, vessels, piping, white goods, and other items shall be disposed of in accordance with applicable regulations. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

3.9 MACHINERY FLUIDS AND POWER PLANT SYSTEMS FLUIDS

A. Drain all equipment containing hydraulic fluids, lubricating oils, fuel oil, antifreeze, and all other types of fluids. Decontaminate all systems, including piping, by means of steam cleaning or triple rinsing, or both, with a compatible fluid to remove all visible contamination.

B. Collect and drum all fluids, including decontamination fluids drained from the above described equipment.

C. Label drums for transport and disposal.

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

E. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

3.10 WHITE GOODS AND OTHER ITEMS

A. Remove and properly dispose of all environmentally hazardous items and systems components installed in white good item before proper disposal of the unit. This work includes, but is not limited to:

1. Water coolers.

2. Air conditioners.

3. Refrigerators.

B. White good items which do not contain environmentally hazardous materials, and white good item carcasses from which the Contractor has removed environmentally hazardous materials prior to removal from the building, shall be removed, transported and disposed of at an approved facility(ies).

C. City of Waltham shall not pay for disposal until complete documentation of lawful disposal is received by City of Waltham.

3.11 REMOVAL OF TRANSFORMERS

A. All transformers shall be handled with appropriate personal protective equipment. Unless otherwise noted, the Contractor, shall assume that all unmarked transformers contain oil with >500 ppm PCBs.

B. Prepare each transformer to be electrically disconnected in compliance with the National Electrical Safety Code, the National Electric Code, and OSHA regulations.

C. Transformers labeled "dry-type" shall be handled and disposed of as white goods, in compliance with 310 CMR 19.017, Waste Control.

D. Transformers identified as not containing PCBs or labeled "No PCBs" shall be drained, if necessary, and shall be marked with green paint. The fluid shall be placed in properly sealed drums and painted green, and shall be sampled and analyzed by the CONTRACTOR, as required, for transportation and disposal purposes.

E. Each transformer not positively identified as containing "No PCBs" shall be sampled in place to determine the concentration of PCBs prior to any removal activities, as required for transportation and disposal purposes.

F. Before sampling transformers, the Contractor shall take the following preparatory and precautionary measures. These measures shall remain in effect for the duration of the transformer sampling and removal process.

1. Cover and seal all drains, manholes, and other openings that may lead to waterways in such a manner to prevent any migration of the contaminants.

2. Provide temporary containment designed to contain the entire contents of the fluid to be removed. This containment shall encompass the transformer and any areas designated for temporary storage. In addition, absorbents in the amounts adequate to absorb a spill from one complete equipment failure shall be placed within the containment area.

3. Provide adequate spill cleanup equipment within the containment area.

G. The laboratory proposed by the Contractor shall be certified for such analyses by the Commonwealth of Massachusetts, and shall be capable of demonstrating skill and experience in similar projects. The laboratory shall forward copies of all reports and technical correspondence directly to the Consultant. All reports shall completely and positively identify each transformer sampled.

H. Following the disconnection of the electrical power source, pump PCB fluids in place from the equipment into specified containers before moving to minimize the accidental release of fluids. The PCB-filled type of electrical equipment is not intended for use as transport vessels and, therefore, must be drained of fluids before removal and transport. Following draining and drumming of fluids, transformers shall be move from the existing location to the loading area where they will be loaded onto a truck and transported to the disposal facilities. Each drum shall be properly labeled and sealed.

I. Any transformers identified shall be marked with paint as follows:

1. Green: No PCBs.

2. Red: Containing PCBs.

J. Transformers shall then be ready to be moved and transported to the applicable disposal facility.

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

3.12 FIRE EXTINGUISHERS

A. Fire extinguishers may contain corrosive agents (monoammonium phosphate, ammonium phosphate) and may be reactive in water.

B. De-pressurize prior to disposal.

C. Fire extinguishers and their contents shall be landfilled in accordance with regulatory requirements. Do not discharge to the ground or to surface water. Do not cross contaminant with other fire extinguisher agents.

D. Submit proof of disposal to the Consultant.

3.13 TEMPORARY STORAGE

A. Partially filled containers of hazardous waste may be stored at the work site for intermittent packaging provided that:

1. Each container is properly labeled when it is first placed in service;

2. Each container remains closed at all times except when compatible waste types are added; and

3. When moved from site to site, each container remains within the geographic boundaries of the facility without moving or crossing public access highways.

3.14 TRANSPORTATION, DISPOSAL AND/OR RECYCLING OF HAZARDOUS WASTES

A. Continuously maintain custody of all hazardous material generated at the work site. Provide security, short-term storage, transportation and disposition until custody is transferred to an approved properly permitted disposal site or recycling center. Document continuous chain-of custody.

B. Do not remove, or cause to be removed, hazardous waste from the property without a

legally executed Uniform Hazardous Waste manifest.

C. At completion of hauling and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to the Consultant.

D. Recycling and Recovery: Turn over waste that contains materials for which recovery and/or recycling is possible to an approved recycling center. Materials subject to recycling include:

1. Fluorescent light tubes.

2. Thermostats with mercury switches.

3. Lead acid batteries

4. Refrigerant

3.15 DISCOVERY OF HAZARDOUS MATERIALS

A. If hazardous materials, such as chemicals, or other hazardous materials are discovered during the course of the work other than those identified in the Plans and Specifications, cease work in affected area only and immediately notify the Consultant and City of Waltham of such discovery. Do not proceed with work in such areas until instructions are issued by the Consultant. Continue work in other areas.

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

END OF SECTION

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.

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.

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 Hazardous Waste training program and supervisors with appropriate 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. The Contractor is responsible to determine current waste packaging, labeling handling, transportation, disposal, and record-keeping requirements for each waste stream.

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

C. 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. 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. Exterior grey and black caulk at the North Branch Library were tested for polychlorinated biphenyls (PCBs), and were found to contain PCB concentrations of between 2-5 parts per million (ppm), below the threshold to be characterized as a PCB bulk product waste. However, due to the fact the PCB concentrations are greater than 2 ppm in this caulk, waste generated from the management of this material cannot be disposed of in an in-state landfill per the Massachusetts Contingency Plan (MCP).

3.4 WASTE MANAGEMENT

A. 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.

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

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.

C. Exterior grey and black caulk and impacted masonry material at the North Branch Library 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.

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 CERC and Shriver buildings and exterior caulk associated with the Kelly 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.

2. Specific PCB Remediation Scope of Work:

   Kelly Building: 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.

   Shriver Building: 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.

   CERC Building: 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 Shriver & CERC buildings. 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 Kelly 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 at the Kelly 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 Shriver 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 Kelly, Shriver, and CERC buildings 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 Shriver, CERC, Kelly, and Greene building structures, foundations, 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 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 – 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 031100 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 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 017000 - 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

SECTION 312500

EROSION AND SEDIMENTATION CONTROLS

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.

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 necessary to complete the work of this Section, including but not limited to the following:

1. Control measures to prevent all erosion, siltation and sedimentation of wetlands, waterways, construction areas, adjacent areas and off-site areas. Control measures include:

   a. Siltation control fencing
   b. Construction Entrance/Exit station
   c. Catch basin inserts

2. Control measures shall be accomplished adjacent to or in the following work areas:

   a. Soil stockpiles and on-site storage and staging areas.
   b. Debris and recycling material stockpiles.
   c. Cut and fill slopes and other stripped and graded areas.

3. Additional means of protection shall be provided by the Contractor as required for continued or unforeseen erosion problems, at no additional cost to the City of Waltham.

4. Periodic maintenance of all sediment control structures shall be provided to ensure intended purpose is accomplished. Sediment control measures shall be in working condition at the end of each day.

5. After any significant precipitation, sediment control structures shall be inspected for integrity. Any damaged device shall be corrected immediately.

B. The Contractor may select the type of siltation control fencing for installation. Material and installation procedures are provided for both hay bale/silt fence and filter socks. Both systems are acceptable

1.3 RELATED WORK

A. 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.

2. Section 311000 - SITE CLEARING for protection of existing tress and other vegetation to remain.

1.4 SCHEDULING AND SEQUENCING

A. The proposed work shall be performed prior to the initiating any excavation and/or demolition activity.

B. Erosion control measures shall be established at the beginning of construction and maintained during the entire period of construction. On-site areas that are subject to severe erosion and off-site areas that are especially vulnerable to damage from erosion and/or sedimentation shall be identified and receive special attention.

C. All land-disturbing activities shall be planned and conducted to minimize the size of the area exposed at any one time and the length of the time of exposure.

D. All land-disturbing activities shall be planned and conducted in a manner that minimizes off-site sedimentation damage.

E. All erosion control measures shall be removed at the completion of the work. Proper disposal of erosion and sediment control materials shall be the responsibility of the Contractor.

1.5 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. Submit to the Designer, material specification for all materials and equipment furnished under this Section.

1.6 QUALITY ASSURANCE

A. The Contractor shall comply with the requirements of the Stormwater Pollution Prevention Plan prepared for the USEPA NPDES General Construction Permit, which are incorporated herein by reference, and all other applicable requirements of governing authorities having jurisdiction. The Specifications and Drawings are not represented as being comprehensive, but rather convey the intent to provide complete slope protection and erosion control for both the Commonwealth's and adjacent property.

B. Erosion control measures shall be established at the beginning of construction and maintained during the entire period of construction. On-site areas which are subject to severe erosion, and off-site areas which are especially vulnerable to damage from erosion and/or sedimentation, are to be identified and receive special attention.

C. All land-disturbing activities are to be planned and conducted to minimize the size of the area to be exposed at any one time, the length of time of exposure, and to minimize sedimentation damage outside of the Limits of Work.

D. Surface water runoff originating upgrade of exposed areas should be controlled to reduce erosion and sediment loss during the period of exposure.

E. When the increase in the peak rates and velocity of storm water runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving stream bed, provide measures to control both the velocity and rate of release so as to minimize accelerated erosion and increased sedimentation of the stream.

F. The Contractor is responsible for cleaning out and disposing of all sediment once the storage capacity of the sediment controls is reduced by one-half.

G. The Contractor shall inspect, repair, and maintain erosion and sedimentation control measures during construction until completion of the project.

H. Erosion and sedimentation control measures employed will be subject to approval and inspection by governing agencies having jurisdiction over such work. All erosion and sedimentation control work shall be conducted in accordance with the Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas (DEP).

I. Fines and related costs resulting from failure to provide adequate protection against any environmentally objectionable acts and corrective action to be taken are the obligations of the Contractor.

PART 2 - PRODUCTS

2.1 CATCH BASIN INSERTS:

A. Siltsack® shall be manufactured from a specially designed woven polypropylene geotextile manufactured by SI® Geosolutions and sewn by a double needle machine, using a high strength nylon thread or equal. Siltsack® will be manufactured to fit the opening of the catch basin or drop inlet.

2.2 HAYBALES

A. Bales of Hay fasten with wire and have a minimum size of 1 foot by 1.5 feet by 3 feet and conform to the applicable portions of Section 767 of The Commonwealth of Massachusetts, MassHighway Standard Specifications for Highways and Bridges, latest edition.

2.3 SILTATION FENCE

A. Filter fabric siltation fencing shall be a woven filter fabric having a permittivity of not less than 0.15 sec', a water flow rate of a minimum 12 gallons per minute per square foot, and a grab tensile strength of a minimum of 100 lbs. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics.

2.4 FILTER SOCKS

A. Filter Socks are biodegradable sediment-trapping devices. Manufacturers include SiltSoxx, Corr Logs, Straw Wattles, or equal.

2.5 WOODEN STAKES

A. Stakes: Oak wood, minimum 1-inch by 1-inch, by minimum 36 inches long.

2.6 CONSTRUCTION ENTRANCE/EXIT STATION

A. Geotextile: A non-woven geotextile fabric that meets the requirements of Section 804.11 of the *Standard Specifications for Highway Construction* "Geotextile Fabric for Slope Protection".

B. Aggregate: The proposed aggregate shall have the following gradation:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
4 in.	100
3-1/2 in.	90 to 100
2-1/2 in.	25 to 60
1-1/2 in.	0 to 15
¾ in.	0 to 5

PART 3 - EXECUTION

3.1 CATCHBASIN INSERTS

A. The Contractor shall install Siltsacks in catch basins in accordance with manufacturer's instructions.

B. Drawing D5.3 provides an inventory of catch basins requiring protection including the width, length, and approximate depth to inverts.

3.2 HAYBALES

A. The Contractor will be responsible for two (2) separate items of construction under this item, namely:

1. The control of erosion and siltation during the construction. This is expected to require hay bales, siltation fencing, diversion and control of storm water run-off, ponding areas and similar methods.

2. Restoration of the ground surface in all disturbed areas that as required on the Contract Documents and required under any environmental ruling.

B. Haybales shall be installed in location as shown on the Drawings and as directed by the Designer.

C. Hay bales shall be installed by anchoring bales butted together to existing ground with at least two (2) stakes per bale. Deteriorated hay bales shall be replaced. The haybales shall be removed and disposed of following the successful growth of vegetation in the areas disturbed by the construction. The removal of the hay bales will be subject to the approval of Designer. On embankment areas and on flat areas adjacent to wetland areas, the hay bales shall be installed continuously between the construction site and the wetland area as indicated on the Drawings.

D. Haybales shall be installed around all catch basins to be protected as identified on the Drawings.

3.3 FILTER SOCKS

A. Install in location as shown on the Drawings and as directed by the Designer. Installation shall be performed in accordance with the manufacturer's instructions.

3.4 SILTATION FENCE

A. Install a filter fabric siltation fence prior to construction and remove after full surface restoration has been achieved. Install siltation fence as indicated on the Drawings. Install as follows:

1. Hand shovel excavate a small trench on the upstream side of the desired

fence line location.

2. Unroll the siltation fence system, position the post in the back of the trench (downhill side), and hammer the post at least 1½ feet into the ground.

3. Lay the bottom 6 inches of the fabric into the trench to prevent undermining by storm water run-off.

4. Backfill the trench and compact. Compaction is necessary to prevent the run-off from eroding the backfill.

3.5 CONSTRUCTION ENTRANCE

A. The Contractor shall install the stabilized construction entrance at all points where traffic will be leaving the Site. The location of the stabilized construction entrance shall be proposed by the Contractor and approved by the Designer.

B. The stabilized construction entrance shall be a minimum of 12 feet wide by 20 feet long with a minimum of 6 inches of aggregate.

C. The Contractor shall remove all vegetation and any objectionable material from the proposed location. Divert all surface runoff and drainage from the aggregate to a sediment trap.

D. Install the geotextile prior to placing any aggregate. The geotexile shall be placed in accordance with the manufacturer's instructions.

E. Place a minimum of six inches of aggregate on top of the geotexile.

3.6 CLEANING AND MAINTENANCE

A. The Contractor shall clean all catch basins at the beginning and end of the Project.

B. The Contractor shall inspect the stabilized construction entrance every seven days. The Contractor shall check for mud and sediment buildup and pad integrity. The Contractor shall wash, replace, and/or add stone whenever the entrance fails to perform effectively or as directed by the Designer.

C. The Contractor shall inspect the control system immediately after each rainfall and daily during prolonged rainfall. Make repairs immediately.

D. Remove and dispose of accumulated sediments when they reach approximately one-half the height of the control system, and when directed by the Designer.

E. Any catchbasin that collect sediments as a result of the Contractor shall be thoroughly cleaned out by the Contractor.

F. Replace control system promptly if fabric decomposes or system becomes ineffective prior to the expected usable life.

G. Maintain or replace system until no longer necessary for intended purposes.

3.7 REMOVAL AND RESTORATION

A. The Contractor shall notify the Designer upon completion of the work but prior to the removal of control structures.

B. The Contractor shall not remove the control structures until the Designer approves removal.

C. The Contractor shall remove and dispose of all control system at completion of the work.

D. The Contractor shall spread remaining sediment to conform to grade.

END OF SECTION

APPENDICES

APPENDIX A -
Negative Determination & Order of Conditions

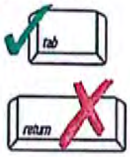
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



From:

Waltham
Conservation Commission

To: Applicant

Brian Reagan
Name

617 Lexington Street
Mailing Address

Waltham | MA | 02452
City/Town | State | Zip Code

Property Owner (if different from applicant):

City of Waltham School Department
Name

617 Lexington Street
Mailing Address

Waltham | MA | 02452
City/Town | State | Zip Code

1. Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

Title	Date
655 Lexington St - Parcel Boundary Map	13 Dec 21
National Flood Hazard Layer - FIRMette	13 Dec 21
655 Lexington St - National Wetlands Inventory Map	13 Dec 21

2. Date Request Filed:

14 December 2021

B. Determination

Pursuant to the authority of M.G.L. c. 131, § 40, the Conservation Commission considered your Request for Determination of Applicability, with its supporting documentation, and made the following Determination.

Project Description (if applicable):

Demolition of old North Branch Library building at 655 Lexington Street, Waltham.

Project Location:

655 Lexington Street
Street Address

Waltham
City/Town

R033
Assessors Map/Plat Number

003 0001
Parcel/Lot Number

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 2 – Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Determination (cont.)

The following Determination(s) is/are applicable to the proposed site and/or project relative to the Wetlands Protection Act and regulations:

Positive Determination
Note: No work within the jurisdiction of the Wetlands Protection Act may proceed until a final Order of Conditions (issued following submittal of a Notice of Intent or Abbreviated Notice of Intent) or Order of Resource Area Delineation (issued following submittal of Simplified Review ANRAD) has been received from the issuing authority (i.e., Conservation Commission or the Department of Environmental Protection).

☐ 1. The area described on the referenced plan(s) is an area subject to protection under the Act. Removing, filling, dredging, or altering of the area requires the filing of a Notice of Intent.

☐ 2a. The boundary delineations of the following resource areas described on the referenced plan(s) are confirmed as accurate. Therefore, the resource area boundaries confirmed in this Determination are binding as to all decisions rendered pursuant to the Wetlands Protection Act and its regulations regarding such boundaries for as long as this Determination is valid.

_____

_____

_____

☐ 2b. The boundaries of resource areas listed below are not confirmed by this Determination, regardless of whether such boundaries are contained on the plans attached to this Determination or to the Request for Determination.

_____

_____

_____

☐ 3. The work described on referenced plan(s) and document(s) is within an area subject to protection under the Act and will remove, fill, dredge, or alter that area. Therefore, said work requires the filing of a Notice of Intent.

☐ 4. The work described on referenced plan(s) and document(s) is within the Buffer Zone and will alter an Area subject to protection under the Act. Therefore, said work requires the filing of a Notice of Intent or ANRAD Simplified Review (if work is limited to the Buffer Zone).

☐ 5. The area and/or work described on referenced plan(s) and document(s) is subject to review and approval by:

_____
Name of Municipality

Pursuant to the following municipal wetland ordinance or bylaw:

_____ _____
Name Ordinance or Bylaw Citation

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Determination (cont.)

☐ 6. The following area and/or work, if any, is subject to a municipal ordinance or bylaw but not subject to the Massachusetts Wetlands Protection Act:

☐ 7. If a Notice of Intent is filed for the work in the Riverfront Area described on referenced plan(s) and document(s), which includes all or part of the work described in the Request, the applicant must consider the following alternatives. (Refer to the wetland regulations at 10.58(4)c. for more information about the scope of alternatives requirements):

- ☐ Alternatives limited to the lot on which the project is located.
- ☐ Alternatives limited to the lot on which the project is located, the subdivided lots, and any adjacent lots formerly or presently owned by the same owner.
- ☐ Alternatives limited to the original parcel on which the project is located, the subdivided parcels, any adjacent parcels, and any other land which can reasonably be obtained within the municipality.
- ☐ Alternatives extend to any sites which can reasonably be obtained within the appropriate region of the state.

Negative Determination

Note: No further action under the Wetlands Protection Act is required by the applicant. However, if the Department is requested to issue a Superseding Determination of Applicability, work may not proceed on this project unless the Department fails to act on such request within 35 days of the date the request is post-marked for certified mail or hand delivered to the Department. Work may then proceed at the owner's risk only upon notice to the Department and to the Conservation Commission. Requirements for requests for Superseding Determinations are listed at the end of this document.

☐ 1. The area described in the Request is not an area subject to protection under the Act or the Buffer Zone.

☐ 2. The work described in the Request is within an area subject to protection under the Act, but will not remove, fill, dredge, or alter that area. Therefore, said work does not require the filing of a Notice of Intent.

☒ 3. The work described in the Request is within the Buffer Zone, as defined in the regulations, but will not alter an Area subject to protection under the Act. Therefore, said work does not require the filing of a Notice of Intent, subject to the following conditions (if any).

see attached

☐ 4. The work described in the Request is not within an Area subject to protection under the Act (including the Buffer Zone). Therefore, said work does not require the filing of a Notice of Intent, unless and until said work alters an Area subject to protection under the Act.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Determination (cont.)

☐ 5. The area described in the Request is subject to protection under the Act. Since the work described therein meets the requirements for the following exemption, as specified in the Act and the regulations, no Notice of Intent is required:

Exempt Activity (site applicable statuatory/regulatory provisions)

☐ 6. The area and/or work described in the Request is not subject to review and approval by:

Name of Municipality

Pursuant to a municipal wetlands ordinance or bylaw.

Name | Ordinance or Bylaw Citation

C. Authorization

This Determination is issued to the applicant and delivered as follows:

☐ by hand delivery on

Date

☒ by certified mail, return receipt requested on

1/13/2022
Date

This Determination is valid for **three years** from the date of issuance (except Determinations for Vegetation Management Plans which are valid for the duration of the Plan). This Determination does not relieve the applicant from complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.

This Determination must be signed by a majority of the Conservation Commission. A copy must be sent to the appropriate DEP Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community) and the property owner (if different from the applicant).

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 2 – Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

C. Authorization (cont.)

Signatures:

Signature	Printed Name
	Philip Moser, Chair
	William Doyle, Vice Chair
	Gerard Dufromont
	Bradley Baker
	Michael Donovan
	Matthew Deveaux

D. Appeals

The applicant, owner, any person aggrieved by this Determination, any owner of land abutting the land upon which the proposed work is to be done, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate Department of Environmental Protection Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community) to issue a Superseding Determination of Applicability. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and Fee Transmittal Form (see Request for Departmental Action Fee Transmittal Form) as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Determination. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant if he/she is not the appellant. The request shall state clearly and concisely the objections to the Determination which is being appealed. To the extent that the Determination is based on a municipal ordinance or bylaw and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

Waltham Conservation Commission
119 School Street
Waltham, MA 02451-4596

CONDITIONS OF NEGATIVE DETERMINATION OF APPLICABILITY
AS ISSUED BY THE WALTHAM CONSERVATION COMMISSION

Applicant: Brian Reagan / Waltham Public Schools
Location: 655 Lexington Street
Date of Issuance: January 13, 2022

Additional conditions apply to this negative determination (Part B, Negative Determination, 3.).

3. The work described in the Request is within the Buffer Zone, as defined in the regulations, but will not alter an Area subject to protection under the Act. Therefore, said work does not require the filing of a Notice of Intent, subject to the following conditions.

1. Robust erosion controls will be installed, to include silt socks and a silt fence at the edge of the site.
2. The applicant will be permitted to install native saplings provided they do not interfere with sight lines at the intersection.
3. The cellar hole and any other excavaton will be completely backfilled with clean fill.
4. At the conclusion of work, the site will match existing grades and not add to erosion.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

Request for Departmental Action Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

Provided by DEP

A. Request Information

1. Location of Project

a. Street Address

b. City/Town, Zip

c. Check number

d. Fee amount

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

2. Person or party making request (if appropriate, name the citizen group's representative):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

4. DEP File Number:

B. Instructions

1. When the Departmental action request is for (check one):

☐ Superseding Order of Conditions – Fee: $120.00 (single family house projects) or $245 (all other projects)

☐ Superseding Determination of Applicability – Fee: $120

☐ Superseding Order of Resource Area Delineation – Fee: $120

Send this form and check or money order, payable to the *Commonwealth of Massachusetts,* to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

B. Instructions (cont.)

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community).

4. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

APPENDIX B-
Environmental Report
655 Lexington Street

efi global

BOSTON NORTH

April 10, 2019

Mr. Joseph Pedulla
Chief Procurement Officer
City of Waltham
610 Main Street
Waltham, MA 02452

RE: Asbestos & Hazardous Materials Survey Report
North Branch Library
655 Lexington Street Waltham, MA 02452
EFI Project No. 020.00415

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 North Branch Library located at 685 Lexington Street Waltham, Massachusetts (Site). EFI performed the survey on March 26, 2019, using a fully trained and licensed building inspector. 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.

Derrick Calvario
Environmental Scientist

John Vaz
Project Manager

ASBESTOS & HAZARDOUS MATERIALS SURVEY REPORT

North Branch Library 655 Lexington Street Waltham, MA 02451

Prepared for:

Mr. Joseph Pedulla
Chief Procurement Officer
City of Waltham
610 Main Street
Waltham, MA 02452

Prepared by:

155 West Street, Suite 6
Wilmington, Massachusetts 01887

EFI Project Number 020. 00415

TABLE OF CONTENTS

TABLES

ATTACHMENTS

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 the North Branch Library located at 685 Lexington Street Waltham, MA (Site).

EFI's asbestos and hazardous materials survey of the Site building was conducted on March 26, 2019. 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 lead that may present on the interior and exterior of the site building.

The North Branch Library is a single-story municipal building with a basement, totaling office building with a basement, totaling approximately 3,600 square feet in area. The building is constructed of brick and CMU exterior walls wood framing, and a pitched, shingled roof. Interior finishes include carpeted and tiled floors, and plaster walls and ceilings. The Site building was historically utilized as a library and youth center. The building has been vacant for several years.

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 inspector Mr. John Vaz Inspector (License No.: AAC-0903). A total of 68 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 of Cinnaminson, New Jersey, a Massachusetts-licensed laboratory. Samples were analyzed with a standard 3-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.

The locations of ACMs identified herein are depicted on the sample location drawings presented in Attachment D. 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 MA limit for classification as ACM:

- 9"x9" grey with colored fleck floor tile and associated black mastic
- Ceiling texture
- Pipe Elbows
- Vibe cloth on furnace
- Residual grey window caulk
- Black sealant at metal joint flashing
- White window glaze
- Grey exterior seam caulk
- Cement backing panel on decorative window cutouts

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 MA-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 blue paint on the door frame/block wall, white paint on exterior wood trim, and black paint on exterior wood trim all contained lead concentrations of greater than 0.5% 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 black paint on metal guardrail, yellow paint on concrete, and white paint on plaster were reported as containing detectable lead concentrations below 0.5% 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 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 emergency lights/exit signs, fire extinguishers, lead acid batteries, equipment containing CFCs/refrigerant, computer/television equipment, and various containerized wastes. 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 a USEPA-accredited and Massachusetts-licensed asbestos inspector. 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 no detectable asbestos:

- Skim coat plaster
- Coarse coat plaster
- Yellow carpet mastic
- Black cove base and associated black mastic
- Foil wrap on fiberglass lines
- Fabric wrap on fiberglass lines
- Ceramic wall tile grout
- Ceramic wall tile adhesive
- Green sink undercoat
- Ceramic floor tile grout
- Ceramic floor tile adhesive
- Skim coat on concrete wall
- Inlay window on door glaze
- Sheetrock backer board behind decorative window cutout
- Vapor barrier behind sheetrock backer board
- Asphalt roof shingle
- Tar paper under roof shingle

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 of Cinnaminson, New Jersey, a Massachusetts-licensed laboratory. Samples were analyzed with a standard 3-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 State-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 3-day turnaround time 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/cm2. EMSL reported that the blue paint on the door frame/block wall, white paint on exterior wood trim, and black paint on exterior wood trim all contained lead concentrations of greater than 0.5% 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 black paint on metal guardrail, yellow paint on

concrete, and white paint on plaster were reported as containing detectable lead concentrations below 0.5% 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/m3) and the OSHA permissible exposure limit (PEL) of 50 µg/m3.

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 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 emergency lights/exit signs, fire extinguishers, lead acid batteries, equipment containing CFCs/refrigerant, computer/television equipment, and various containerized wastes 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

Material Description	Material Location	Estimated Quantity
12”12” grey with colored fleck floor tile and associated black mastic	Throughout 1st floor, stairwell, Entrance Foyer	1,800 SF
Ceiling texture	Throughout 1st floor and basement ceilings	3,600 SF
Pipe elbows	Throughout building	50 SF
Vibe cloth on furnace	Basement Boiler Room	5 SF
Residual grey window caulk	Exterior Windows	850 LF (56 Windows)
White window glaze	Exterior Windows	850 LF (56 Windows)
Exterior grey seam caulk	Exterior	60 LF
Black sealant at metal joint flashing	Exterior	180 LF
Cement backing panel on decorative window cutouts	Exterior windows	150 SF (22 Panels)

SF – square feet
LF – linear feet

TABLE 2

UNIVERSAL WASTE & HAZARDOUS MATERIALS INVENTORY

Material Description (Hazard)	Material Location	Estimated Quantity	
Fluorescent light tubes	Basement	12	Units
Fluorescent light ballasts	Basement	6	Units
Smoke alarms	Throughout building	10	Units
Emergency lights	Throughout building	6	Units
Exit signs	Building exits	3	Units
Pull stations	Building exits	3	Units
Refrigerator	Basement Office	1	Unit
Office Grade Printer	Basement Office	1	Unit
Vending Machine	1st Floor Main Library	1	Unit
Miscellaneous computer/TV equipment (i.e., monitors, CPU's, printers, etc.)	Throughout Building	50	Units
Miscellaneous containerized wastes	Basement Boiler Room	20	Gallons

SF – square feet
LF – linear feet

ATTACHMENT A

PHOTOGRAPHS

View of site. Note pitched asphalt shingled roof

1st floor Main Library

ACM ceiling texture

Plaster walls at the site

Yellow carpet mastic, and ACM 9”x9” grey with colored streak floor tile/mastic (under carpet)

Basement rec room. Note ACM ceiling texture.

Textured paint on concrete wall

Foil and fabric wrap on fiberglass lines, and ACM pipe elbows

ACM vibe cloth on furnace

Green sink undercoat

Ceramic floor tile grout/adhesive

Ceramic wall tile grout/adhesive

Exterior window system. Note ACM white window glaze, ACM residual grey window caulk, and ACM cement backing panel behind decorative cutouts (below windows)

Backing sheetrock and vapor barrier behind decorative window cutouts

ATTACHMENT B

ASBESTOS LABORATORY REPORT

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041908216
Customer ID:	EAFI66
Customer PO:	
Project ID:	

Attention:	John Vaz	**Phone:**	(978) 688-3736
	EFI Global, Inc.	**Fax:**	(978) 688-5494
	155 West Street	**Received Date:**	03/27/2019 9:25 AM
	Suite 6	**Analysis Date:**	03/30/2019 - 03/31/2019
	Wilmington, MA 01887	**Collected Date:**	03/26/2019
Project:	020.00415 North Branch Library - 685 Lexington 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 *041908216-0001*	1st Floor Main Library - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001B *041908216-0002*	1st Floor Main Library - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001C *041908216-0003*	1st Floor Main Library - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001D *041908216-0004*	1st Floor Main Library - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002A *041908216-0005*	1st Floor Main Library - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002B *041908216-0006*	1st Floor Main Library - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002C *041908216-0007*	1st Floor Main Library - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002D *041908216-0008*	1st Floor Main Library - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
003A *041908216-0009*	1st Floor Main Library - Yellow Carpet Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
004A *041908216-0010*	1st Floor Main Library - 9x9 Grey with Color Fleck Floor Tile	Gray Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
005A *041908216-0011*	1st Floor Main Library - Associated Black Mastic	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
004B *041908216-0012*	1st Floor Entrance Foyer - 9x9 Grey with Color Fleck Floor Tile				Positive Stop (Not Analyzed)
005B *041908216-0013*	1st Floor Entrance Foyer - Associated Black Mastic				Positive Stop (Not Analyzed)
006A *041908216-0014*	1st Floor Main Library - Ceiling Texture	White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
006B *041908216-0015*	1st Floor Main Library - Ceiling Texture				Positive Stop (Not Analyzed)
006C *041908216-0016*	1st Floor Main Library - Ceiling Texture				Positive Stop (Not Analyzed)

Initial report from: 04/01/2019 07:32:12

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 041908216
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**
006D *041908216-0017*	1st Floor Main Library - Ceiling Texture				Positive Stop (Not Analyzed)
006E *041908216-0018*	1st Floor Main Library - Ceiling Texture				Positive Stop (Not Analyzed)
007A *041908216-0019*	1st Floor Main Library - Black Cove Base	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
007B *041908216-0020*	1st Floor Main Library - Black Cove Base	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
008A *041908216-0021*	1st Floor Main Library - Associated Black Adhesive	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
008B *041908216-0022*	1st Floor Main Library - Associated Black Adhesive	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
006F *041908216-0023*	Basement Rec Room - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
006G *041908216-0024*	Basement Rec Room - Ceiling Texture	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001E *041908216-0025*	Basement Rec Room - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001F *041908216-0026*	Basement Rec Room - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002E *041908216-0027*	Basement Rec Room - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002F *041908216-0028*	Basement Rec Room - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
001G *041908216-0029*	Basement Office - Skim Coat Plaster	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
002G *041908216-0030*	Basement Office - Coarse Coat Plaster	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
009A *041908216-0031*	Basement Rec Room - Fabric Wrap on FG Line	White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
010A *041908216-0032*	Basement Rec Room - Foil Wrap on FG Line	White/Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
011A *041908216-0033*	Basement Rec Room - Pipe Elbow	Gray Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
003B *041908216-0034*	Basement Rec Room - Yellow Carpet Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
009B *041908216-0035*	Basement Boiler Room - Fabric Wrap on FG Line	White Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected

Initial report from: 04/01/2019 07:32:12

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 041908216
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**
010B *041908216-0036*	Basement Boiler Room - Foil Wrap on FG Line	White/Black Fibrous Homogeneous	75% Cellulose	25% Non-fibrous (Other)	None Detected
011B *041908216-0037*	Basement Boiler Room - Pipe Elbow				Positive Stop (Not Analyzed)
011C *041908216-0038*	Basement Boiler Room - Pipe Elbow				Positive Stop (Not Analyzed)
012A *041908216-0039*	Basement Boiler Room - Vibe Cloth on Furnace	Gray/White Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
012B *041908216-0040*	Basement Boiler Room - Vibe Cloth on Furnace				Positive Stop (Not Analyzed)
013A *041908216-0041*	Basement Office Bathroom - Ceramic Wall Tile Grout	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
014A *041908216-0042*	Basement Office Bathroom - Ceramic Wall Tile Adhesive	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
015A *041908216-0043*	Basement Office - Green Sink Undercoat	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
015B *041908216-0044*	Basement Office - Green Sink Undercoat	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
016A *041908216-0045*	Basement Men's Room - Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017A *041908216-0046*	Basement Men's Room - Ceramic Floor Tile Adhesive	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
016B *041908216-0047*	Basement Women's Room - Ceramic Floor Tile Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
017B *041908216-0048*	Basement Women's Room - Ceramic Floor Tile Adhesive	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
013B *041908216-0049*	Basement Women's Room - Ceramic Wall Tile Grout	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
014B *041908216-0050*	Basement Women's Room - Ceramic Wall Tile Adhesive	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018A *041908216-0051*	Basement Rec Room - Skim Coat on Concrete Wall	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018B *041908216-0052*	Basement Rec Room - Skim Coat on Concrete Wall	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018C *041908216-0053*	Basement Rec Room - Skim Coat on Concrete Wall	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
018D *041908216-0054*	Basement Rec Room - Skim Coat on Concrete Wall	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 04/01/2019 07:32:12

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041908216
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**
018E *041908216-0055*	Basement Rec Room - Skim Coat on Concrete Wall	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
019A *041908216-0056*	Exterior Windows - Residual Grey Window Caulk	Gray Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
019B *041908216-0057*	Exterior Windows - Residual Grey Window Caulk				Positive Stop (Not Analyzed)
020A *041908216-0058*	Exterior - Black Sealant at Metal Joint Flashing	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
020B *041908216-0059*	Exterior - Black Sealant at Metal Joint Flashing				Positive Stop (Not Analyzed)
021A *041908216-0060*	Exterior Windows - White Window Glaze	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
021B *041908216-0061*	Exterior Windows - White Window Glaze				Positive Stop (Not Analyzed)
022A *041908216-0062*	Exterior Doors - Inlay Window on Door Glaze	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
022B *041908216-0063*	Exterior Doors - Inlay Window on Door Glaze	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
023A *041908216-0064*	Exterior - Grey Exterior Seam Caulk	Tan Non-Fibrous Homogeneous		94% Non-fibrous (Other)	6% Chrysotile
023B *041908216-0065*	Exterior - Grey Exterior Seam Caulk				Positive Stop (Not Analyzed)
024A *041908216-0066*	Exterior - Cement Backing Panel on Decorative Window Cutouts	Gray Fibrous Homogeneous		80% Non-fibrous (Other)	20% Chrysotile
024B *041908216-0067*	Exterior - Cement Backing Panel on Decorative Window Cutouts				Positive Stop (Not Analyzed)
025A *041908216-0068*	Exterior - Sheetrock Backer Board behind Decorative Window	Brown/Tan Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
025B *041908216-0069*	Exterior - Sheetrock Backer Board behind Decorative Window	Brown/Tan Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
026A *041908216-0070*	Exterior - Vapor Barrier behind Sheetrock	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
026B *041908216-0071*	Exterior - Vapor Barrier behind Sheetrock	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
027A *041908216-0072*	Roof - Asphalt Roof Shingle	Black Fibrous Homogeneous	20% Glass	80% Non-fibrous (Other)	None Detected

Initial report from: 04/01/2019 07:32:12

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041908216
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**
027B *041908216-0073*	Roof - Asphalt Roof Shingle	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
028A *041908216-0074*	Roof - Tar Paper under Roof Shingle	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
028B *041908216-0075*	Roof - Tar Paper under Roof Shingle	Black Fibrous Homogeneous	25% Cellulose	75% Non-fibrous (Other)	None Detected

Analyst(s)

Edward Zambrano (7)
Jonathan Blanfort (31)
Jesus Cuebas (11)
John Flanagan (12)

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. 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 or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367, LA #01427

Initial report from: 04/01/2019 07:32:12

OrderID: 041908216

041908216

efi global

BOSTON NORTH

RECEIVED
EMSL
CINNAMINSON, N.J.
2019 MAR 27 A 9:

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:	020.00415 North Branch Library - 665 Lexington St 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,C,D	Skim Coat Plaster	1ST Floor Main Library
002A,B,C,D	Course Coat Plaster.	" " " "
003A	Yellow Carpet Mastic	" " " "
004A	9x9 Grey w/ Color Fleck Floor Tile	" " " "
005A	Associated Black Mastic	" " " "
004B	9x9 Grey w/ Color Fleck Floor Tile	1ST Floor Entrance Foyer
005B	Associated Black Mastic	" " " "
006A,B,C,D,E	Ceiling Texture	1ST Floor Main Library
007A,B	Black Cove Base	" " " "
008A,B	Associated Black Adhesive	" " " "
006F,G	Ceiling Texture	Basement REC Room

24 Total Number of Samples Submitted: _____ Date Collected: 3/26/19. 75

Samplers Name: John Vaz Samplers Signature: _____

Relinquished By (EFI): _____ FEDEX Date: 3/26/19 Time: 1700

Received By (Lab): _____ Date: 3-27-19 Time: 9:25

041908216

efi global

RECEIVED
EMSL
CINNAMINSON, NJ
2019 MAR 27 A 9:58

Sample ID	Type of Material	Location
001 E, F	Skim Coat Plaster	Basement Rec Room
008 E, F	Coarse Coat Plaster	" " "
001 G	Skim Coat Plaster	Basement Office.
002 G.	Coarse Coat Plaster	" "
009 A	Fabric Wrap on FG Line	Basement Rec Room.
010 A	Foil Wrap on FG Line	" " "
011 A	Pipe Elbow.	" " "
003 B	Yellow Carpet Mastic	Basement Rec Room
009 B	Fabric Wrap on FG Line	Basement Boiler Room.
010 B	Foil Wrap on FG Line.	" " "
011 B, C	Pipe Elbow	" " "
012 A, B	Vibe Cloth on Furnace	" " "
013 A	Ceramic Wall Tile Grout	Basement Office, Bathroom
014 A.	Ceramic Wall Tile Adhesive.	" " "
015 A, B	Green Sink Undercoat	Basement Office
016 A	Ceramic Floor Tile Grout	Basement Mens Room.
017 A	Ceramic Floor Tile Adhesive	" " "
016 B	Ceramic Floor Tile Grout	Basement Women's Room
017 B	Ceramic Floor Tile Adhesive	" " "
013 B	Ceramic Wall Tile Grout	" " "
014 B	" " " Adhesive.	" " "
018 A, B, C, D, E	Skim Coat On Concrete Wall	Basement Rec Room.
019 A, B.	Residual Grey Window Caulk	Exterior Windows
020 A, B	Black Sealant at Metal Joint Flashing	Exterior
021 A, B	White Window Glaze	Exterior Windows
022 A, B	Inlay Window or Door Glaze	Exterior Door
023 A, B	Grey Exterior Seam Caulk.	Exterior
024 A, B	Cement Backing Panel on Decorative Window Cutouts	Exterior.
025 A, B	Sheetrock Backer Board behind Decorative Window Cutouts	Exterior
026 A, B	Vapor Barrier Behind Sheetrock	Exterior.

efi global

041908216

RECEIVED
EMSL
CINNAMINSON, NJ
2019 MAR 27 A 9:5

Sample ID	Type of Material	Location
027A,B	Asphalt Roof Shingle	Roof
026A,B	Tar paper Under Roof Shingle	11
~~[illegible]~~	Ceiling Texture	~~Basement Rec Room~~

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:	201903026
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:	03/27/19 10:10 AM
Collected:	3/26/2019

Project: **020.00415 / North Branch Library / 685 Lexington 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	*201903026-0001*	3/26/2019	3/29/2019	0.2897 g	0.082 % wt
	Site: White Paint on Plaster - 1st Floor Entrance Foyer				
PB002	*201903026-0002*	3/26/2019	3/29/2019	0.1882 g	0.025 % wt
	Site: Yellow Paint on Concrete - Basement Rec Room				
PB003	*201903026-0003*	3/26/2019	3/29/2019	0.2504 g	1.0 % wt
	Site: Blue Paint on Door Frame/Block Wall - Basement Boiler Room				
PB004	*201903026-0004*	3/26/2019	3/29/2019	0.2774 g	8.5 % wt
	Site: White Paint on Exterior Wood Trim - Exterior				
PB005	*201903026-0005*	3/26/2019	3/29/2019	0.2416 g	6.9 % wt
	Site: Black Paint on Exterior Wood Trim - Exterior				
PB006	*201903026-0006*	3/26/2019	3/29/2019	0.2894 g	0.22 % wt
	Site: Black Paint on Metal Guardrail - Exterior				

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 03/29/2019 18:09:34

OrderID: 201903026

201903026

efi global

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:	020.00415 North Branch Library 685 Lexington St 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:	PB Flame AAS	Check for Positive Stop:	☐
Notes:	Please analyze all plaster and joint compound samples.		

	Sample ID	Type of Material	Location
1	PB001	White Paint on Plaster	1ST Floor Entrance Foyer.
2	PB002	Yellow Paint on concrete.	Basement Rec Room
3	PB003	Blue Paint on Door Frame/Block Wall	Basement Boiler Room
4	PB004	White Paint on Exterior Wood Trim.	Exterior
5	PB005	Black Paint on Exterior Wood Trim	"
6	PB006	Black Paint on Metal Guardrail.	"

Total Number of Samples Submitted: _____ Date Collected: 3/26/19

Samplers Name: John Vaz Samplers Signature: _____

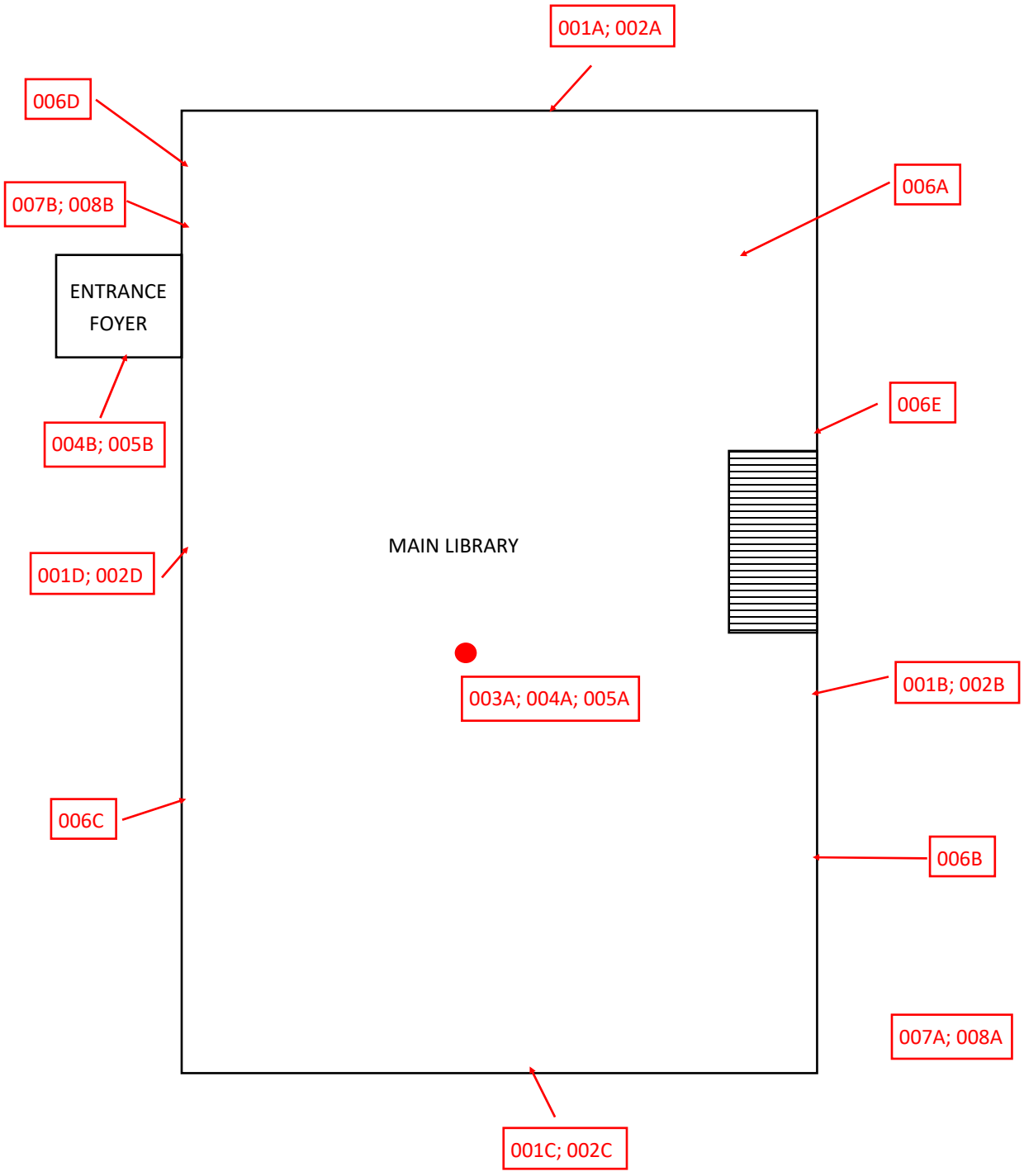
Relinquished By (EFI): _____ FEDEX Date: 3/26/19 Time: 1700

Received By (Lab): _____ EMS/FedEx Date: 3/27/19 Time: 1010

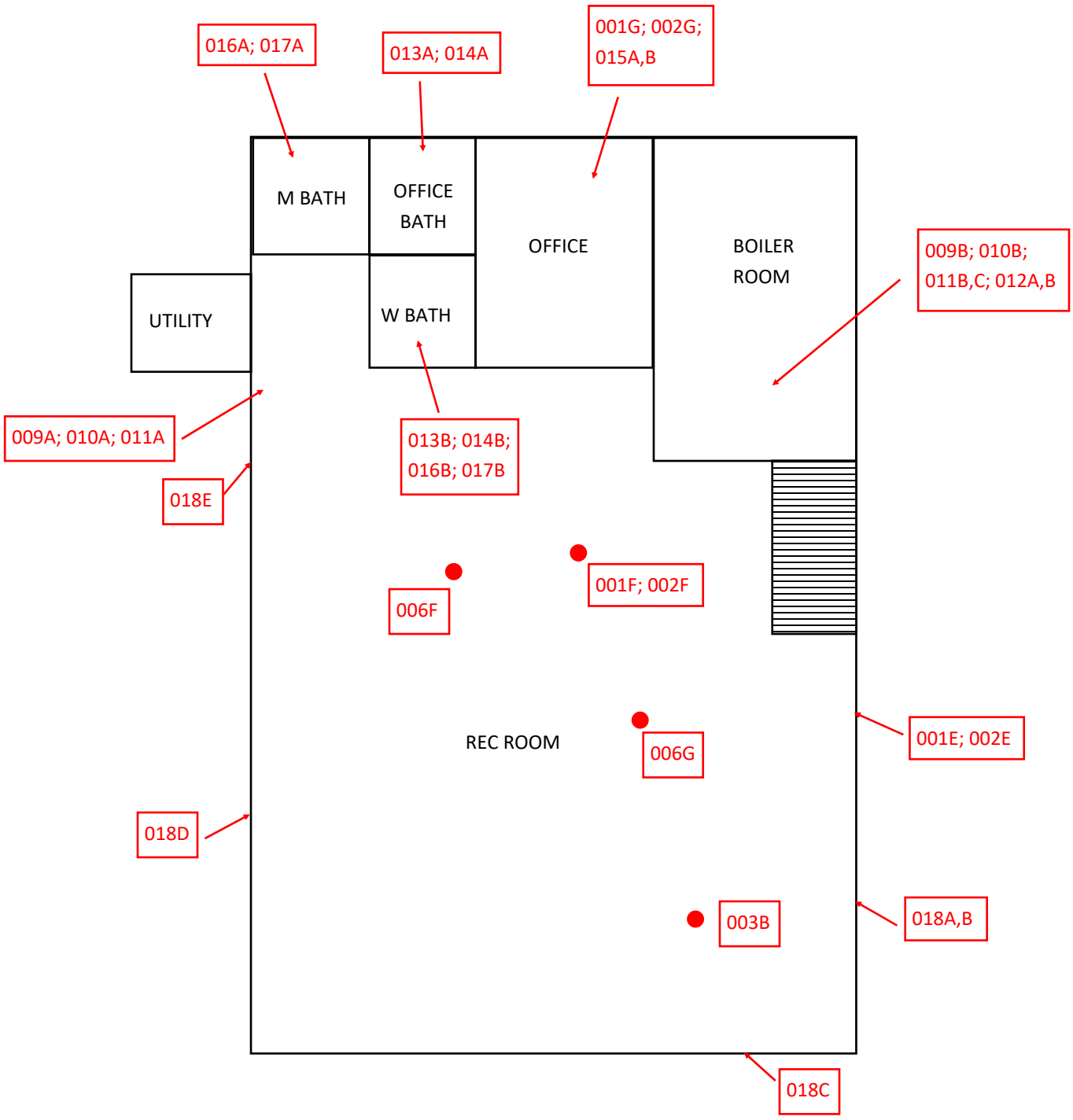
Page _____ of _____

ATTACHMENT D

SAMPLE LOCATION DRAWINGS



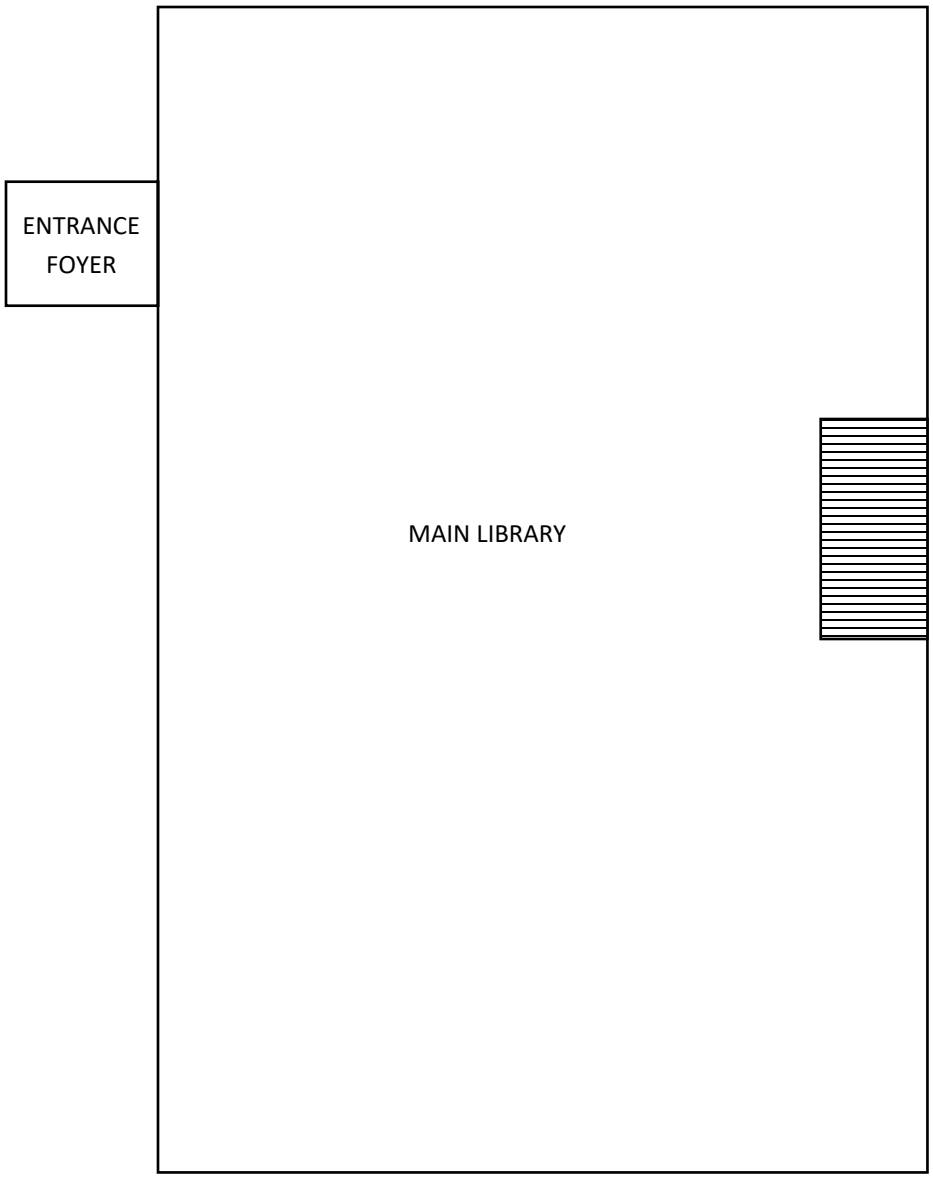
	ACM SAMPLE LOCATION DRAWING 1ST FLOOR NORTH BRANCH LIBRARY 685 LEXINGTON STREET WALTHAM, MASSACHUSETTS	efi global PN: DT: DB: CB: FIGURE 1A



	ACM SAMPLE LOCATION DRAWING BASEMENT NORTH BRANCH LIBRARY 685 LEXINGTON STREET WALTHAM, MASSACHUSETTS	efi global PN: DT: DB: CB: FIGURE 1B

ATTACHMENT E

ASBESTOS LOCATION DRAWINGS

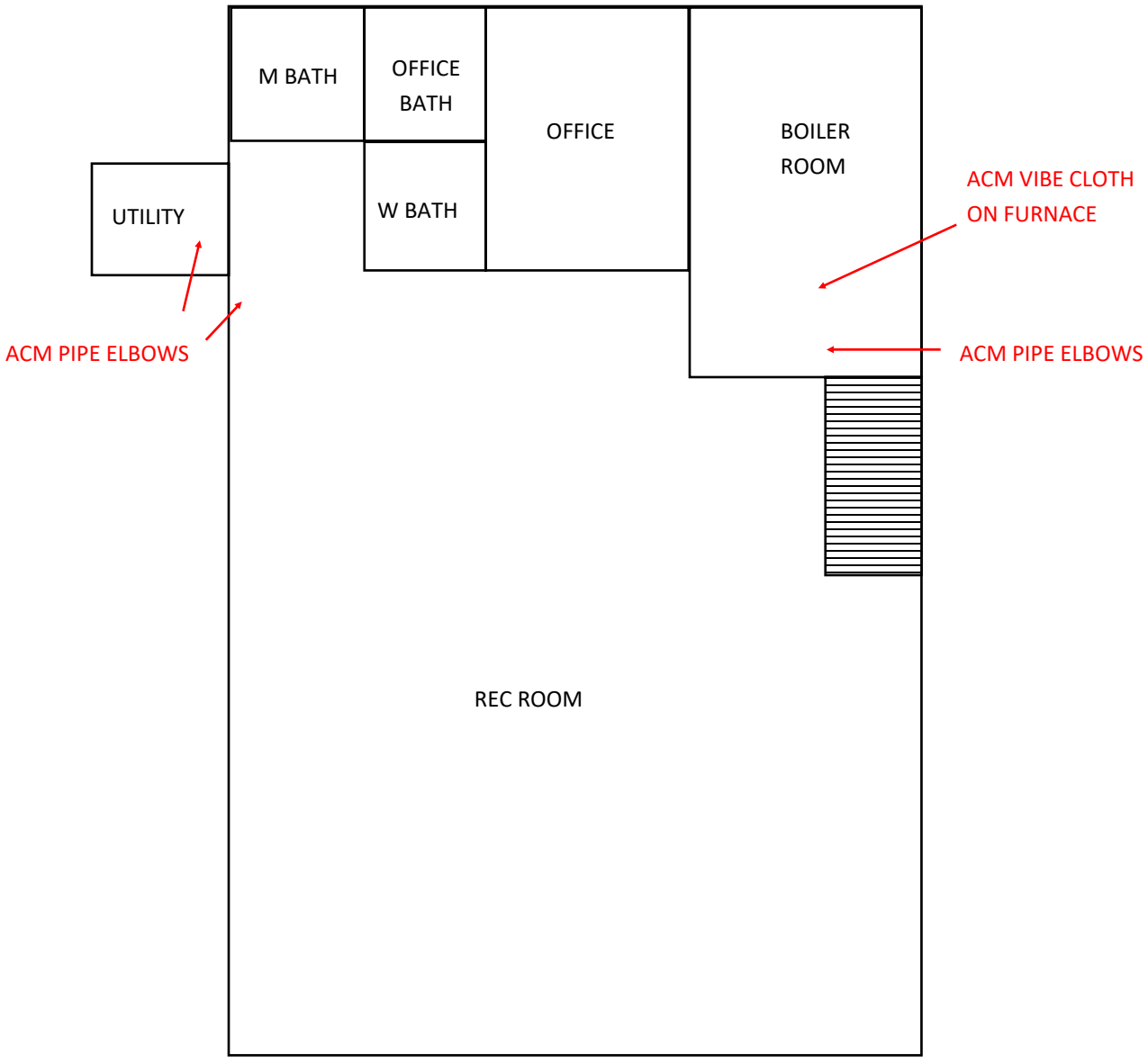


NOTE—ACM CEILING TEXTURE AND 9”X9” FLOOR TILE/MASTIC THROUGHOUT 1ST FLOOR UNDER CARPET
ACM EXTERIOR WINDOW CAULK, GLAZE, BACKING CEMENT PANEL AT DECORATIVE WINDOW CUTOUT (ALL WINDOWS)
ACM GREY EXTERIOR SEAM CAULK AND BLACK SEALANT AT METAL JOINT FLASHING AT EXTERIOR (THROUGHOUT EXTERIOR)

ACM LOCATION DRAWING
1ST FLOOR
NORTH BRANCH LIBRARY
685 LEXINGTON STREET
WALTHAM, MASSACHUSETTS

efi global

PN:		FIGURE
DT:		2A
DB:	CB:	



NOTE—ACM CEILING TEXTURE THROUGHOUT BASEMENT

	ACM LOCATION DRAWING BASEMENT NORTH BRANCH LIBRARY 685 LEXINGTON STREET WALTHAM, MASSACHUSETTS	efi global PN: DT: DB: CB: FIGURE 2B

R033	003	0001		1 of 2	COMMERCIAL	TOTAL ASSESSED: 47,707,400
Map	Block	Lot	Unit	CARD		!65164!

City of Waltham

PROPERTY LOCATION

No	Alt No	Direction/Street/City
655		LEXINGTON ST, WALTHAM

OWNERSHIP

Owner 1:	CITY OF WALTHAM		
Owner 2:	C/O THE SCHOOL DEPT		
Owner 3:			
Street 1:	617 LEXINGTON ST		
Street 2:			
Twn/City:	WALTHAM		
St/Prov:	MA	Cntry	Own Occ:
Postal:	02452-3003		Type:

PREVIOUS OWNER

Owner 1:			
Owner 2:			
Street 1:			
Twn/City:			
St/Prov:		Cntry	
Postal:			

NARRATIVE DESCRIPTION

This Parcel contains 1,907,928 SQ. FT. of land mainly classified as MUNICPL with a(n) LIBRARY Building Built about 1948, Having Primarily BRICK Exterior and ASPHALT Roof Cover, with 0 Units, 0 Baths, 2 HalfBaths, 0 3/4 Baths, 0 Rooms Total and 0 Bdrms.

OTHER ASSESSMENTS

Code	Descrip/No	Amount	Com. Int

IN PROCESS APPRAISAL SUMMARY

Use Code	Building Value	Yard Items	Land Size	Land Value	Total Value
903	315,300		1907928.000	33,463,700	33,779,000
Total Card	315,300		43.800	33,463,700	33,779,000
Total Parcel	14,242,200	1,500	43.800	33,463,700	47,707,400

Source: Market Adj Cost | Total Value per SQ unit /Card: 15,053.03 | /Parcel: 286.85

PREVIOUS ASSESSMENT

Tax Yr	Use	Cat	Bldg Value	Yrd Items	Land Size	Land Value	Total Value	Asses'd Value	Notes	Date
2019	903	EX	14,242,200	1500	1,907,928.	33,463,700	47,707,400	47,707,400	Year End Roll	11/27/2018
2019	903	FV	14,242,200	1500	1,907,928.	33,463,700	47,707,400	47,707,400	Year End Roll	1/4/2019
2019	903	NC	14,242,200	1500	1,907,928.	29,916,600	44,160,300	44,160,300	Year End Roll	10/15/2018
2018	903	EX	14,242,200	1500	1,907,928.	29,916,600	44,160,300	44,160,300	Year End Roll	11/28/2017
2018	903	FV	14,242,200	1500	1,907,928.	29,916,600	44,160,300	44,160,300	Year End Roll	12/5/2017

BUILDING PERMITS

Date	Number	Descrip	Amount	C/O	Last Visit	Fed Code	F. Descrip	Comment
12/10/2004	893	ALTERATI	15 C					MAINTENANCE PERMIT

SALES INFORMATION

TAX DISTRICT

Grantor	Legal Ref	Type	Date	Sale Code	Sale Price	V	Tst	Verif	Assoc PCL Value	Notes

INCOME INFORMATION

Type	Description	Flr	Qlty	Leased Area	Ten	Rent $	Ovr Rent	Econ Inc

PROPERTY FACTORS

Item	Code	Descip	%	Item	Code	Descrip
Z				U		
o				t		
n				l		
Census:				Exmpt		
Flood Haz:						
D	0	test		Topo		
s				Street	41	41
t				Traffic		

Gross Income:		X	Totals:	0	
Vacancy/DL:		X	Net Income:		Deficiency:
Other Income:			Rate Adj:		Final Val Card:
Expenses:		X	Vac Adj:		Val Per Unit Card
Reserves:		X	Exp Adj:		Final Val/Parcel:
Lease Type:	0	X	Indicated Value:		Val Per Unit/Par:
Overall Rate:			Surplus:		Cost/Inc Ratio:

LAND SECTION

Use Code	Description	LUC Fact	No of Units	Depth / PriceUnits	Unit Type	Land Type	LT Factor	Base Value	Unit Price	Adj	Neigh	Neigh Influ	Neigh Mod	Infl 1	%	Infl 2	%	Infl 3	%	Appraised Value	Alt Class	%	Spec Land	J Code	Fact	Use Value	Notes
903	MUNICPL		1907928		SQ. FT.	SITE		0	25.	.702	CG	1.00								33,463,742						33,463,700	

Total AC/HA:	43.80000	Total SF/SM:	1907928.00	Parcel LUC:	903	MUNICPL	Prime NB Desc	COM GD	Total:	33,463,740	Spl Credit		Total:	33,463,700

Disclaimer: This Information is believed to be correct but is subject to change and is not warranteed.

Legal Description

Lot Size	
Total Land:	
Land Unit Type:	

User Acct	65164
GIS Ref	
GIS Ref	
Insp Date	

Parcel ID: R033 003 0001

PRINT

Date	Time
05/17/19	09:00:50

LAST REV

Date	Time
02/27/15	09:53:12

apro

PAT ACCT. 65164

Patriot Properties Inc.

USER DEFINED

Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
ASR Map:	
Fact Dist:	
Reval Dist:	
Year:	
LandReason:	
BldReason:	

ACTIVITY INFORMATION

Date	Result	By	Name
2/20/2014	MEASURED	406	ROBBIE MCLAU

Sign: VERIFICATION OF VISIT NOT DATA __/__/__

EXTERIOR INFORMATION

Type:	53 - LIBRARY
Sty Ht:	1 - 1 story
(Liv) Units:	Total: 0
Foundation:	01 - CONCRETE
Frame:	03 - CONCRETE
Prime Wall:	07 - BRICK
Sec Wall:	%
Roof Struct:	01 - GABLE
Roof Cover:	1 - ASPHALT
Color:	BRICK / WHITE
View / Desir:	

GENERAL INFORMATION

Grade:	C - AVERAGE
Year Blt:	1948
Eff Yr Blt:	
Alt LUC:	
Alt %:	
Jurisdict:	
Fact:	
Const Mod:	
Lump Sum Adj:	

INTERIOR INFORMATION

Avg Ht/FL:	
Prim Int Wal	01 - DRYWALL
Sec Int Wall:	%
Partition:	
Prim Floors:	14 - ASPHALT TILE
Sec Floors:	%
Bsmnt Flr:	
Bsmnt Gar:	
Electric:	03 - TYPICAL
Insulation:	01 - NONE
Int vs Ext:	
Heat Fuel:	01 - OIL
Heat Type:	03 - FORCED H/W
# Heat Sys:	1
% Heated:	100
% AC:	
Solar HW:	NO
Central Vac:	NO
% Com Wal	
% Sprinkled	

BATH FEATURES

Full Bath		Rating:	
A Bath:		Rating:	
3/4 Bath:		Rating:	
A 3QBth		Rating:	
1/2 Bath:	2	Rating:	Average
A HBth:		Rating:	
OthrFix:		Rating:	

OTHER FEATURES

Kits:	Rating:
A Kits:	Rating:
Frpl:	Rating:
WSFlue:	Rating:

CONDO INFORMATION

Location:	
Total Units:	
Floor:	
% Own:	
Name:	

DEPRECIATION

Phys Cond:	AV - Average	30. %
Functional:		%
Economic:		%
Special:		%
Override:		%
Total:		30 %

CALC SUMMARY

Basic $ / SQ:	127.00
Size Adj.:	1.29999995
Const Adj.:	0.95480990
Adj $ / SQ:	157.639
Other Features:	5000
Grade Factor:	1.00
Neighborhood Inf:	1.00000000
LUC Factor:	1.00
Adj Total:	450403
Depreciation:	135121
Depreciated Total:	315282

COMMENTS

LOT # 655 LEXINGTON STREET : 655 LEXINGTON STREET.

RESIDENTIAL GRID

1st Res Grid	Desc:	# Units

Level	FY	LR	DR	D	K	FR	RR	BR	FB	HB	L	O
Other												
Upper												
Lvl 2												
Lvl 1												
Lower												

Totals	RMs:	BRs:	Baths:	HB 2

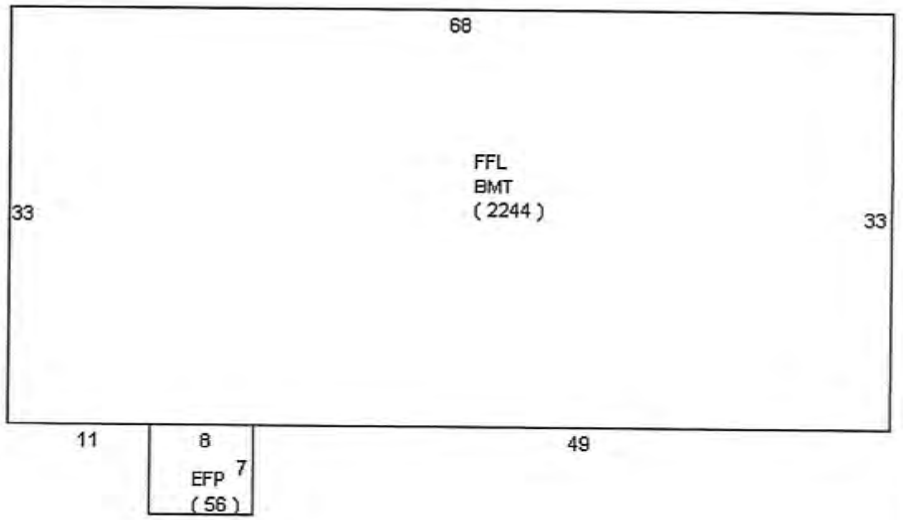
REMODELING

Exterior:	
Interior:	
Additions:	
Kitchen:	
Baths:	
Plumbing:	
Electric:	
Heating:	
General:	50

RES BREAKDOWN

No Unit	RMS	BRS	FL
Totals			

SKETCH



COMPARABLE SALES

Rate	Parcel ID	Typ	Date	Sale Price

WtAv$/SQ:		AvRate:		Ind.Val	0.00000
Juris. Factor:			Before Depr:	157.64	
Special Features:	0		Val/Su Net:	69.39	
Final Total:	315300		Val/Su SzAd	140.51	

SUB AREA

Code	Description	Area - SQ	Rate - AV	Undepr Value
BMT	BASEMENT	2,244	39.410	88,436
FFL	FIRST FLOOR	2,244	157.640	353,742
EFP	ENCL PRCH	56	57.600	3,226

SUB AREA DETAIL

Sub Area	% Usbl	Descrip	% Type	Qu	# Ten

Net Sketched Area:	4,544	Total:	445,404
Size Ad	2244 Gross Area	4544	FinArea 2244

SPEC FEATURES/YARD ITEMS

Code	Description	A Y/S	Qty	Size/Dim	Qual	Con	Year	Unit Price	D/S	Dep	LUC	Fact	NB Fa	Appr Value	JCod JFact	Juris. Value

PARCEL ID R033 003 0001

IMAGE

AssessPro Patriot Properties, Inc

More: N	Total Yard Items:	Total Special Featues:	Total:

R033	003	0001		2 of 2	COMMERCIAL
Map	Block	Lot	Unit	CARD	

City of Waltham

TOTAL ASSESSED: 47,707,400
!65164!

Patriot Properties Inc.

PROPERTY LOCATION

No	Alt No	Direction/Street/City
655		LEXINGTON ST, WALTHAM

OWNERSHIP

Owner 1:	CITY OF WALTHAM
Owner 2:	C/O THE SCHOOL DEPT
Owner 3:	
Street 1:	617 LEXINGTON ST
Street 2:	
Twn/City:	WALTHAM
St/Prov:	MA
Cntry	
Own Occ:	
Postal:	02452-3003
Type:	

PREVIOUS OWNER

Owner 1:	
Owner 2:	
Street 1:	
Twn/City:	
St/Prov:	
Cntry	
Postal:	

NARRATIVE DESCRIPTION

This Parcel contains 1,907,928 SQ. FT. of land mainly classified as MUNICPL with a(n) SCHOOL Building Built about 2009, Having Primarily BRICK Exterior and TAR + GRAVEL Roof Cover, with 0 Units, 0 Baths, 40 HalfBaths, 4 3/4 Baths, 0 Rooms Total, and 0 Bdrms.

OTHER ASSESSMENTS

Code	Descrip/No	Amount	Com. Int

IN PROCESS APPRAISAL SUMMARY

Use Code	Building Value	Yard Items	Land Size	Land Value	Total Value
903	13,926,900	1,500	0.000		13,928,400
Total Card	13,926,900	1,500	0.000		13,928,400
Total Parcel	14,242,200	1,500	43.800	33,463,700	47,707,400

Source: Market Adj Cost | Total Value per SQ unit /Card: 84.89 | /Parcel: 286.85

PREVIOUS ASSESSMENT

Tax Yr	Use	Cat	Bldg Value	Yrd Items	Land Size	Land Value	Total Value	Asses'd Value	Notes	Date

BUILDING PERMITS

Date	Number	Descrip	Amount	C/O	Last Visit	Fed Code	F. Descrip	Comment

SALES INFORMATION

TAX DISTRICT

Grantor	Legal Ref	Type	Date	Sale Code	Sale Price	V	Tst	Verif	Assoc PCL Value	Notes

INCOME INFORMATION

Type	Description	Flr	Qlty	Leased Area	Ten	Rent $	Ovr Rent	Econ Inc

PROPERTY FACTORS

Item	Code	Descip	%	Item	Code	Descrip
Z				U		
o				t		
n				l		
Census:				Exmpt		
Flood Haz:						
D	0	test		Topo		
s				Street	41	41
t				Traffic		

Gross Income:		X	Totals:	0	
Vacancy/DL:		X	Net Income:		Deficiency:
Other Income:			Rate Adj:		Final Val Card:
Expenses:		X	Vac Adj:		Val Per Unit Card
Reserves:		X	Exp Adj:		Final Val/Parcel:
Lease Type:	0	X	Indicated Value:		Val Per Unit/Par:
Overall Rate:			Surplus:		Cost/Inc Ratio:

ACTIVITY INFORMATION

Date	Result	By	Name
2/20/2014	INFO AT DOOR	406	ROBBIE MCLAU

Sign: VERIFICATION OF VISIT NOT DATA __/__/__

LAND SECTION

Use Code	Description	LUC Fact	No of Units	Depth / PriceUnits	Unit Type	Land Type	LT Factor	Base Value	Unit Price	Adj	Neigh	Neigh Influ	Neigh Mod	Infl 1	%	Infl 2	%	Infl 3	%	Appraised Value	Alt Class	%	Spec Land	J Code	Fact	Use Value	Notes
903	MUNICPL		0		ACRES	SITE		0	0.	.000	CG	1.00															

Legal Description

Lot Size	
Total Land:	
Land Unit Type:	

User Acct	65164
GIS Ref	
GIS Ref	
Insp Date	

Parcel ID R033 003 0001

PRINT

Date	Time
05/17/19	09:00:58

LAST REV

Date	Time
02/27/15	10:01:49
apro	

PAT ACCT. 65164

USER DEFINED

Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
ASR Map:	
Fact Dist:	
Reval Dist:	
Year:	
LandReason:	
BldReason:	

Total AC/HA:	0.00000	Total SF/SM:	0.00	Parcel LUC:	903	MUNICPL	Prime NB Desc	COM GD

Total: | Spl Credit | Total:

Disclaimer: This Information is believed to be correct but is subject to change and is not warranteed.

EXTERIOR INFORMATION

Type:	58 - SCHOOL		
Sty Ht:	2 - 2		
(Liv) Units:		Total:	0
Foundation:	01 - CONCRETE		
Frame:	03 - CONCRETE		
Prime Wall:	07 - BRICK		
Sec Wall:	03 - ALUMINUM	20	%
Roof Struct:	04 - FLAT		
Roof Cover:	04 - TAR + GRAVEL		
Color:	BLUE / GRAY		
View / Desir:			

GENERAL INFORMATION

Grade:	C+ - AVERAGE+		
Year Blt:	2009	Eff Yr Blt:	
Alt LUC:		Alt %:	
Jurisdict:		Fact:	
Const Mod:			
Lump Sum Adj:			

INTERIOR INFORMATION

Avg Ht/FL:	STD		
Prim Int Wal	01 - DRYWALL		
Sec Int Wall:			%
Partition:	T - TYPICAL		
Prim Floors:	14 - ASPHALT TILE		
Sec Floors:			%
Bsmnt Flr:	14 - ASPHALT TILE		
Bsmnt Gar:			
Electric:	03 - TYPICAL		
Insulation:	02 - TYPICAL		
Int vs Ext:	SAME		
Heat Fuel:	02 - GAS		
Heat Type:	01 - FORCED H/A		
# Heat Sys:	1		
% Heated:	100	% AC:	100
Solar HW:	NO	Central Vac:	NO
% Com Wal		% Sprinkled	100

BATH FEATURES

Full Bath		Rating:	
A Bath:		Rating:	
3/4 Bath:	4	Rating:	Average
A 3QBth		Rating:	
1/2 Bath:	40	Rating:	Average
A HBth:		Rating:	
OthrFix:	38	Rating:	Average

OTHER FEATURES

Kits:	1	Rating:	Average
A Kits:		Rating:	
Frpl:		Rating:	
WSFlue:		Rating:	

CONDO INFORMATION

Location:	
Total Units:	
Floor:	
% Own:	
Name:	

DEPRECIATION

Phys Cond:	AV - Average	4.5	%
Functional:			%
Economic:			%
Special:			%
Override:			%
	Total:	4.5	%

CALC SUMMARY

Basic $ / SQ:	80.00
Size Adj.:	0.80732238
Const Adj.:	1.05472004
Adj $ / SQ:	68.120
Other Features:	270554
Grade Factor:	1.10
Neighborhood Inf:	1.00000000
LUC Factor:	1.00
Adj Total:	14499922
Depreciation:	652496
Depreciated Total:	13847426

COMMENTS

LOT # 655 LEXINGTON STREET : 655 LEXINGTON STREET. COURT YART EST. NO ACCESS BECAUSE OF SNOW.

RESIDENTIAL GRID

1st Res Grid	Desc:										# Units	
Level	FY	LR	DR	D	K	FR	RR	BR	FB	HB	L	O
Other												
Upper												
Lvl 2												
Lvl 1												
Lower												

Totals	RMs:	BRs:	Baths:	HB	40

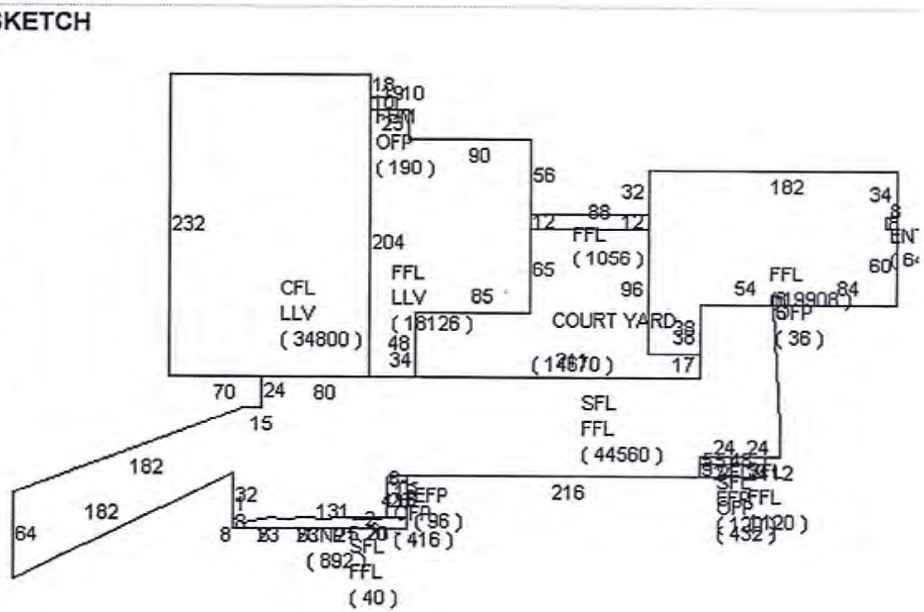
REMODELING

Exterior:	
Interior:	
Additions:	
Kitchen:	
Baths:	
Plumbing:	
Electric:	
Heating:	
General:	

RES BREAKDOWN

No Unit	RMS	BRS	FL
Totals			

SKETCH



SUB AREA

Code	Description	Area - SQ	Rate - AV	Undepr Value
FFL	FIRST FLOOR	83,810	68.120	5,709,132
LLV	LOWER LEVEL	52,926	27.250	1,442,126
SFL	SECOND FLOOR	45,272	68.120	3,083,926
CFL	CATHEDRAL	34,800	74.930	2,607,631
OFP	OPEN PORCH	1,074	14.760	15,849
CNP	CANOPY	892	44.510	39,700
EFP	ENCL PRCH	216	31.600	6,826
FBM	FINISHED BMT	190	17.030	3,236
	Net Sketched Area:	219,244	Total:	12,911,194
Size Ad	163882	Gross Area	219244	FinArea 164072

SUB AREA DETAIL

Sub Area	% Usbl	Descrip	% Type	Qu	# Ter

COMPARABLE SALES

Rate	Parcel ID	Typ	Date	Sale Price

WtAv$/SQ:		AvRate:		Ind.Val	
Juris. Factor:			Before Depr:	74.93	
Special Features:	79500		Val/Su Net:	63.52	
Final Total:	13926900		Val/Su SzAd	84.98	

SPEC FEATURES/YARD ITEMS

PARCEL ID R033 003 0001

Code	Description	A	Y/S	Qty	Size/Dim	Qual	Con	Year	Unit Price	D/S	Dep	LUC	Fact	NB Fa	Appr Value	JCod JFact	Juris. Value
61	ELEV-PAS	D	S	1	2	A	AV	2009	32,500.00	T	4	903		1.	62,400		62,400
81	COOLER	D	S	1	12X24	A	AV	2009	23.68	T	4	903		1.	6,500		6,500
82	FREEZER	D	S	1	19X24	A	AV	2009	24.14	T	4	903		1.	10,600		10,600
02	SHED/FR	D	Y	1	16X20	A	AV	2009	5.80	T	20	903		1.	1,500		1,500

More:	N	Total Yard Items:	1,500	Total Special Featues:	79,500	Total:	81.000

IMAGE

AssessPro Patriot Properties, Inc

APPENDIX C-
Environmental Report
89-91 Maple Street

efi global

BOSTON NORTH

October 19, 2021

Deputy Chief Tim Pratt
City of Waltham Fire Department
175 Lexington Street
Waltham, Massachusetts 02452

VIA EMAIL: tpratt@fire-dept.waltham.ma.us

RE: Pre-Demolition Asbestos & Hazardous Building Materials Survey Report
Two-Family Residential Dwelling
89-91 Maple Street
Waltham, Massachusetts 02453
EFI Project No. 020.01993

Deputy Chief Pratt:

EFI Global Inc. (EFI) is pleased to provide this survey report to the City of Waltham Fire Department for a pre-demolition hazardous building materials survey of the two-family residential dwelling located at 89-91 Maple Street in Waltham, Massachusetts (Site). EFI performed the survey on October 6, 2021. The pre-demolition survey included an inspection of the building for suspect asbestos-containing materials, sampling of representative painted surfaces/coatings for lead, and an inventory of universal waste and other hazardous/regulated materials.

EFI is pleased to provide environmental consulting services to the City of Waltham Fire Department. 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
Project Manager

John Vaz
Senior Project Manager

PRE-DEMOLITION ASBESTOS & HAZARDOUS BUILDING MATERIALS SURVEY REPORT

TWO-FAMILY RESIDENTIAL DWELLING
89-91 MAPLE STREET
WALTHAM, MASSACHUSETTS 02453

Prepared for:

The City of Waltham Fire Department
Attn: Deputy Chief Tim Pratt
175 Lexington Street
Waltham, Massachusetts 02452

Prepared by:

155 West Street, Suite 6
Wilmington, Massachusetts 01887

EFI Project Number 020.01993
October 19, 2021

TABLE OF CONTENTS

EXECUTIVE SUMMARY

EFI Global (EFI) performed a pre-demolition hazardous building materials survey of the two-family residential dwelling located at 89-91 Maple Street, Waltham, Massachusetts (Site). The scope of work included a survey for asbestos-containing materials (ACM), testing for lead painted surfaces, and a visual inventory for regulated/potentially hazardous building materials that may require special handling and disposal prior to the start of planned demolition. The survey was performed on October 6, 2021 by USEPA-accredited and Massachusetts Department of Labor Standards (MassDLS) licensed asbestos inspectors, Mr. Richard Murphy (License No. AI-900522) and Mr. Robert Thomson (License No. AI-031431).

The structure is an approximately 3,000 square foot, three-story wood framed building built in 1920. The survey included all accessible interior and exterior areas of the site building including readily accessible roofing areas (Project Area). Where feasible, EFI utilized destructive investigative methods to inspect wall cavities, beneath floor coverings, above ceilings, or otherwise inaccessible locations. Mechanical and electrical components were not disassembled to access interior components.

Based on the findings of the asbestos survey, the following ACMs were identified in the 89-91 Maple Street Structure.

- Flue packing cement
- Pipe insulation
- Black caulk along roof edge
- Cement shingle siding
- Tan exterior trim caulk

Asbestos was not detected in any of the other suspect materials sampled and analyzed by the laboratory. The identified asbestos-containing materials (ACMs) should be properly removed and disposed by a Massachusetts-licensed Asbestos Contractor prior to the start of planned demolition activities.

Lead paint chip sampling results indicate lead is present on various painted surfaces such as plaster walls, gypsum walls, wood trim, windows and doors ranging from <0.008% to 13.150% by weight. The highest percentage on lead by weight was detected on the white exterior window trim. Contractors performing work on surfaces where lead is present must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead. This will require the use of work practices and engineering controls to minimize airborne exposure to lead as well as proper characterization of wastes prior to disposal.

A visual inventory for other potentially hazardous or regulated building materials was performed. Items including fluorescent lamps and associated ballasts, paint white goods, batteries, insecticide household cleaner, air conditioner, and smoke detectors were observed in accessible building areas.

INTRODUCTION

EFI Global (EFI) performed a pre-demolition hazardous building materials survey of the two-family residential dwelling located at 89-91 Maple Street, Waltham, Massachusetts (Site). The scope of work included a survey for asbestos-containing materials (ACM), testing for lead painted surfaces, and a visual inventory for regulated/potentially hazardous building materials that may require special handling and disposal prior to the start of planned renovations. The survey was performed on October 6, 2021.

The survey included all accessible interior and exterior areas of the building. The building was vacant at the time of EFI's survey. Where feasible, destructive investigative methods were utilized to access wall cavities, areas above ceilings and beneath flooring finishes. Bulk samples of observed and accessible suspect ACMs and paint chips from representative painted surfaces were submitted for laboratory analysis to determine asbestos and lead content.

1.0 ASBESTOS CONTAINING MATERIALS SURVEY

1.1 Survey Methodology and Analytical Methods

The asbestos survey was performed in accordance with EPA, OSHA and MassDEP regulations by USEPA accredited and Massachusetts Department of Labor Standards (MassDLS) licensed asbestos inspectors Mr. Richard Murphy (License No.: AI-900522), and Mr. Robert Thomson (License No. AI-031431) of EFI. EFI's inspectors performed a visual inspection of accessible building areas and collected bulk samples of observed suspect ACMs. A total of 126 bulk samples of suspect ACMs were collected on-site and transported under chain of custody protocol to Asbestos Identification Laboratory (AIL) in Woburn, Massachusetts, a Massachusetts-licensed laboratory. AIL 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 findings of this report are based upon observations of observed suspect materials within the Project Area and the analysis of representative bulk samples collected. Samples were analyzed with a standard 3-day turnaround time using polarized light microscopy (PLM) in accordance with United States Environmental Protection Agency (USEPA) Method 600/R-93/116. 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 to one percent asbestos, it is considered to be an asbestos-containing material under Massachusetts Department of Environmental Protection (MassDEP) asbestos regulations.

Photographs depicting observed suspect ACMs sampled by EFI are presented in Attachment A. The asbestos laboratory report is presented in Attachment B. An inventory of the types, estimated quantities, condition and location of ACMs identified during the survey is presented in Table 1. EFI conducted a thorough inspection of accessible areas within the building. Limited destructive sampling methods/exploratory demolition utilizing hand tools was performed where permitted by the Client to evaluate the potential for hidden suspect materials that may be present inside wall cavities, above ceilings, and beneath floor coverings or in other concealed areas.

Building materials exist in the form of thermal systems insulation (TSI), surfacing materials, and miscellaneous materials. Bulk samples representing individual homogenous areas of suspect ACM, (materials that are determined to be uniform in color and texture and installed in the same construction period) were collected in a randomly distributed manner, in accordance with the EPA sampling protocol outlined in 40 CFR 763:

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.

- Collect at least three bulk samples from each homogeneous area that is less than or equal to 1,000 ft^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.
- Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft^2.

Thermal systems insulation

(e.g., pipe fitting insulation, tank insulation, etc.) 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.

- 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.
- 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.
- 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).

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.

1.2 Asbestos-Containing Materials Findings

The following suspect ACMs sampled by EFI at 89-91 Maple Street were reported by AIL as containing greater than or equal to one percent (1%) asbestos:

- Flue Packing Cement
- Pipe Insulation
- Black Caulk Along Roof Edge
- Cement Shingle Siding
- Tan Exterior Trim Caulk

The following suspect ACMs sampled by EFI at 89-91 Maple Street were reported by AIL as containing no detectable asbestos:

- Gypsum Board
- Joint compound
- White skim coat on gypsum board
- White skim coat on plaster
- Gray base coat plaster
- Gray bottom layer plaster
- Textured plaster
- White chimney coating
- 12" x 12" wood pattern flooring and associated clear mastic
- Sheet flooring, associated black paper and brown mastic
- Yellow cove base mastic
- White ceramic wall grout
- White ceramic wall tile mastic
- Gray ceramic floor tile grout
- Ceramic floor tile backer board
- Gray ceramic floor tile thinset
- Gray ceramic wall tile thinset
- Yellow ceramic floor tile mastic
- Tan paper under wood flooring
- Black paper under wood flooring
- Brown paper under wood flooring
- Yellow wall panel adhesive
- Gray sink coating
- Tan construction caulk
- Roof shingle and associated black mastic
- Roof shingle and associated mastic (main roof)
- Black paper under roof shingle

An inventory of the types, locations, condition and estimated quantities of ACMs identified during the survey is presented in Table 1. Copies of the asbestos laboratory analytical reports are presented in Attachment B.

1.3 Asbestos Survey Limitations

EFI's scope of work included accessible interior and exterior building areas using limited destructive evaluation techniques where feasible to access concealed areas. In addition, EFI was able to inspect the roof and subsurface foundation walls for potential damp-proofing using hand tools to an approximate 1' depth below grade in three (3) locations around the building perimeter.

Any hidden materials uncovered during demolition activities, and not identified within this report, must be assumed to contain asbestos until laboratory analysis proves otherwise. EFI's survey did not include an assessment for underground steam lines and underground transite water/sewer lines that may be present at the Site.

1.4 Recommendations

1. EFI recommends that all identified ACMs and associated asbestos-containing waste materials (ACWM) that will be impacted by the proposed demolition of the two-family residential dwelling be properly removed, packaged, and disposed by a Massachusetts-licensed Asbestos Abatement Contractor. The abatement must be completed in accordance with requirements of MassDLS asbestos regulations (454 CMR 28.00), 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), and applicable transportation regulations, local regulations and ordinances.

2. If suspect ACMs other than the above-referenced materials are identified during demolition activities, EFI recommends that they be assumed ACM until sampled and analyzed by a MassDLS licensed asbestos inspector using a Massachusetts-licensed asbestos analytical laboratory prior to disturbance. EFI is available to assist with abatement contractor oversight and air monitoring as required by applicable state and federal asbestos regulations.

2.0 LEAD TESTING

EFI performed a visual inspection and collected paint chip samples from representative painted/coated substrates from interior and exterior surfaces to determine lead content. Lead analysis was conducted by SanAir Technologies Laboratory (SanAir) of Powhatan, Virginia, with a standard 3-day turnaround time. SanAir analyzed the samples using atomic absorption spectrometry (AAS) in accordance with US EPA method SW846-7420.

2.1 Summary of Findings

A total of fifteen (15) paint chip samples were collected from various surfaces. The lead content of the samples ranged from <0.008% to 13.150% lead by weight. Refer to Table 3 for a list of surfaces sampled. The lead paint laboratory analytical report is presented in Attachment C. All Contractors performing work that disturbs any concentration of lead must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead.

2.2 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 elevated employee exposures. The level of exposure varies based upon the lead concentration, type of work performed, 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 ($\mu g/m^3$) and the OSHA permissible exposure limit (PEL) of 50 $\mu g/m^3$.

OSHA requires that contractors monitor employee exposures if coated surfaces with paint containing lead are impacted during construction or demolition/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 abrasives 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 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.

2.3 Recommendations

It is recommended that construction and demolition personnel performing work at the residence comply with the OSHA Lead in Construction Standard requirements during all construction/renovation activities at the Site.

3.0 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 PCBs” labels. Light ballasts that do not have “No PCBs” labels should be assumed to contain PCBs and treated as PCB-containing and handled/disposed of accordingly. In addition, if light ballasts do not have “No PCBs” labels, the manufacturer can 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 tubes 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 EPA’s Resource Conservation and Recovery Act (RCRA). To minimize the potential of mercury contamination, EFI recommends that fluorescent light bulbs be disposed/recycled in accordance with applicable regulations.

3.1 Summary of Findings

EFI performed a visual inspection to estimate the number of fluorescent light bulbs (lamps) and ballasts located in the building that may be removed and replaced as part of the renovation project. EFI recommends recycling of the fluorescent light bulbs (lamps) in accordance with applicable federal and state regulations. A detailed inventory of fluorescent light bulbs (lamps) and ballasts is provided in Table 3.

4.0 OTHER HAZARDOUS MATERIALS

EFI performed a visual inspection and inventory of potentially hazardous/regulated items including stored chemicals, mechanical equipment or other items located within the building that may require special handling and disposal prior to building renovation activities. During the survey, EFI observed fluorescent lamps and associated ballasts, paint white goods, batteries, insecticide household cleaner, air conditioner, and smoke detectors within the Site building. An inventory of the observed building-related hazardous materials is presented in Table 2.

It is recommended that the observed Other Hazardous Materials in the building be properly removed, disposed or sent to a recycling facility by a qualified contractor.

Table 1

Inventory of Observed Asbestos-Containing Materials
Pre-Demolition Survey
Two-Family Residential Dwelling
89-91 Maple Street, Waltham, Massachusetts
October 6, 2021

Material Description	Material Location(s)	Condition	Estimated Quantity
Flue packing cement	Basement	Damaged	3 SF
Pipe insulation	Basement	Damaged	10 LF
Residual pipe fitting insulation	Basement	Damaged	15 Each
Black caulk on roof edge	Rear roof	Good	40 LF
Cement shingle siding	Exterior	Damaged	4,500 SF
Tan exterior trim caulk	Exterior doors and windows	Good	36 Units

SF – square feet
LF – linear feet

This summary table is not intended for use as a bidding document and is only presented as an appendix to EFI's Pre-Renovation Asbestos Survey Report.

TABLE 2

Universal Waste and Regulated/Hazardous Materials Inventory
Pre-Demolition Survey
Two-Family Residential Dwelling
89-91 Maple Street, Waltham, Massachusetts
October 13, 2021

Material	Location	Quantity
Paint thinner	Basement	1 Gallon
Stored paint	Basement	15 Gallons
Electric hot water heater	Basement	2 Units
Cordless tool battery	Basement	1 Unit
Alarm panel battery	Basement	1 Unit
Insect spray	Basement	1 Gallon
Smoke detector	Throughout	4 Units
Household cleaner	Kitchen	1 Gallon
Compact Fluorescent lamps	Throughout	12 Lamps
Gas Cook stove	Kitchen	1 Unit
Window air conditioner	Third floor	1 Unit

TABLE 3

Summary of Paint Chip Analysis Results for Lead
Pre-Demolition Survey
Two-Family Residential Dwelling
89-91 Maple Street, Waltham, Massachusetts
October 6, 2021

Material Description	Material Location	Substrate	Result % by Weight
White Paint	Stone foundation	Stone	<0.009%
White paint	Stair railing	Wood	<0.009%
Gray paint	Interior wall	Plaster	<0.010%
White paint	Interior window trim	Wood	<0.009%
White paint	Interior trim	Wood	1. 261%
Gray paint	Interior stair tread	Wood	0.132%
Pink paint	Interior wall	Gypsum	<0.008%
Gray paint	Interior wall	Gypsum	<0.010%
Gray paint	Interior radiator	Metal	0.132%
Pink paint	Interior wall	Plaster	0.120%
White paint	Interior wall	Plaster	<0.009%
Gray paint	Interior wall	Plaster	<0.009%
White paint	Interior wall base	Wood	<0.009%
Tan paint	Interior wall	Gypsum	<0.010%
White paint	Exterior trim	Wood	13.150%

ATTACHMENT A

PHOTOGRAPHS

Typical Windows and doors with ACM trim Caulk

Typical Windows and doors with ACM trim Caulk

Black paper beneath wood flooring

Brown paper beneath wood flooring

Residual ACM insulation on pipe fittings

ACM pipe insulation

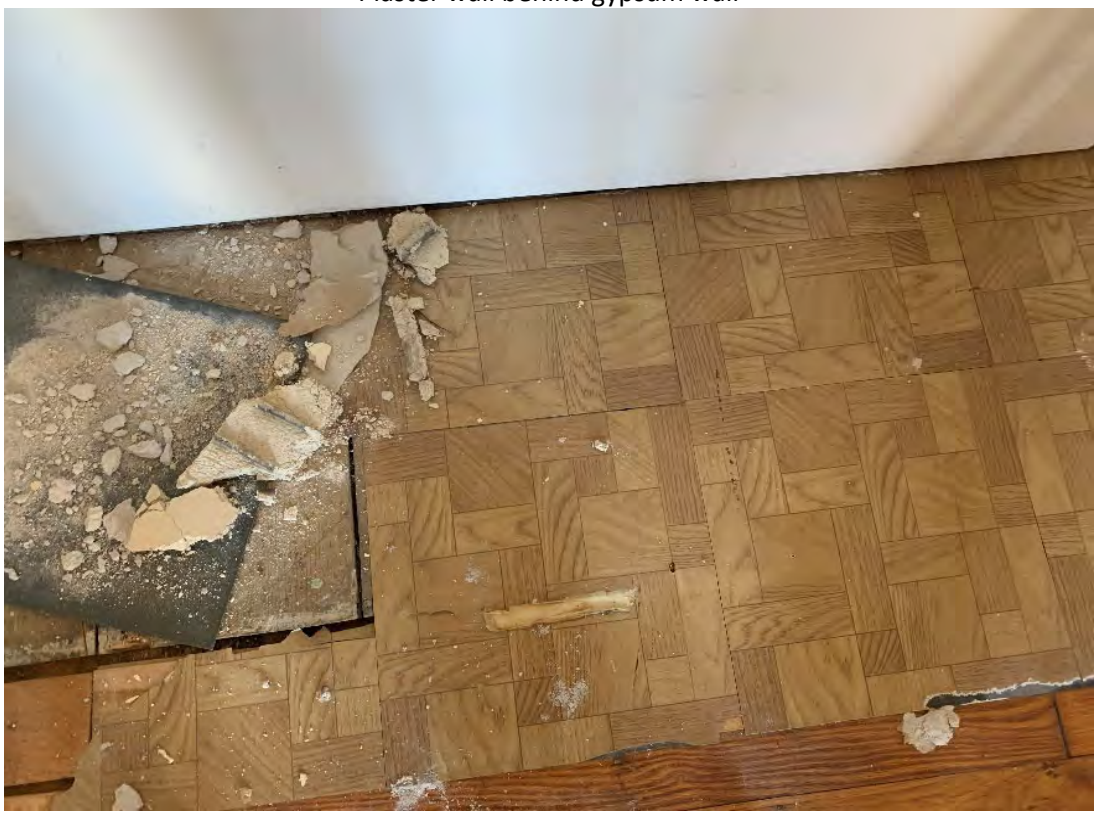
Construction adhesive on plywood flooring

ACM flue packing cement

Plaster wall

Gypsum Board

Plaster wall behind gypsum wall



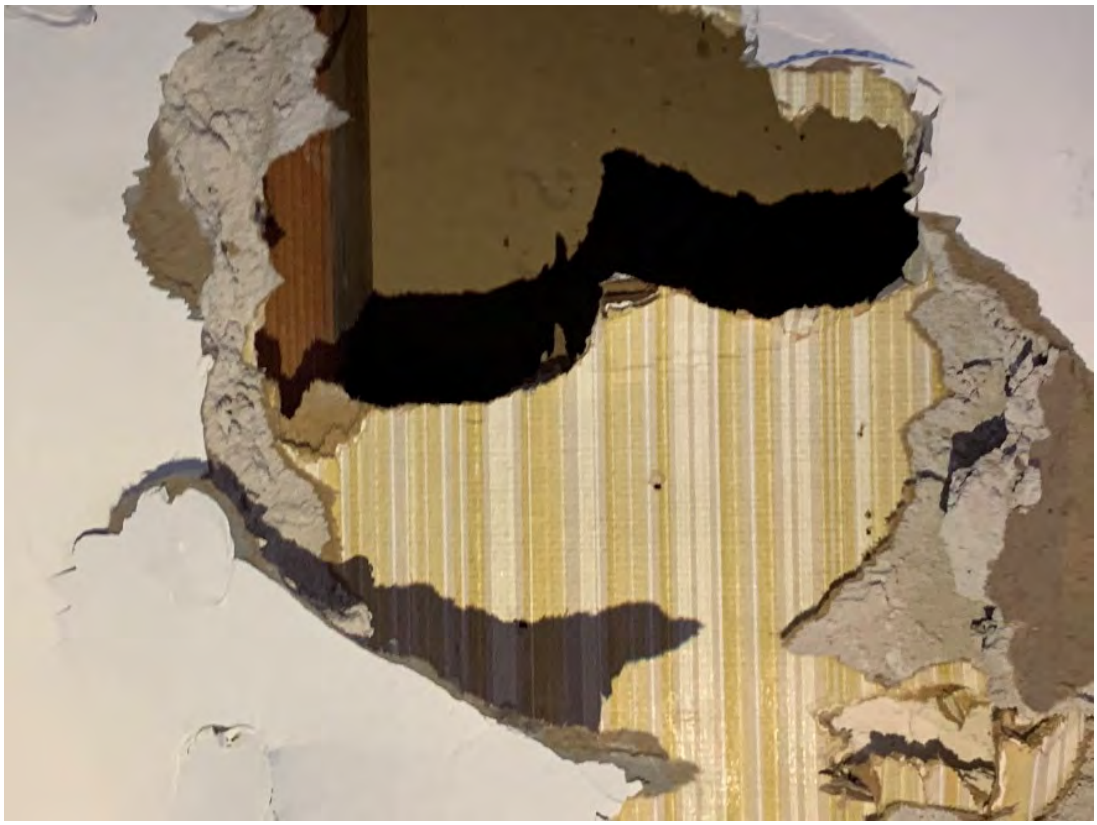
12” x 12” wood pattern floor tile

Textured ceiling finish

Ceramic floor tile grout and thin set

Ceramic wall tile grout and thin set

Ceramic floor tile grout and thin set



Second layer gypsum board wall

Cement backer board

Ceramic wall tile grout and thin set

Kitchen ceramic wall tile on gypsum board

Wall panel adhesive

Plaster behind gypsum board wall

Textured plaster ceiling

Asphalt roof shingle

Exterior ACM cement siding

ACM black roof sealant

Adhesive on wall panel

Gray paper beneath wood flooring

Wall base molding with adhesive

White coating on chimney

ATTACHMENT B

ASBESTOS LABORATORY REPORT

Asbestos Identification Laboratory.

165 New Boston St., Ste 227
Woburn, MA 01801
781-932-9600

Web: www.asbestosidentificationlab.com Email: mikemanning@asbestosidentificationlab.com

NVLAP® Testing Lab Code: 200919-0

Batch: 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

Dear Rich Murphy,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The Analysis Method is BULK PLM ANALYSIS, EPA/600/R-93/116The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.
Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Rich Murphy for your business.

Michael Manning
Owner/Director

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
01A / 777824	Gypsum Board	3rd Floor Front Bedroom	gray	Cellulose 2 Non-Fibrous 98	None Detected
01B / 777825	Gypsum Board	3rd Floor Rear Bedroom	multi	Cellulose 20 Non-Fibrous 80	None Detected
02A / 777826	Joint Compound	3rd Floor Front Bedroom	white	Non-Fibrous 100	None Detected
02B / 777827	Joint Compound	3rd Floor Rear Bedroom	white	Non-Fibrous 100	None Detected
02C / 777828	Joint Compound	3rd Floor Entry Roof	white	Non-Fibrous 100	None Detected
03A / 777829	Gypsum Board	2nd Floor Kitchen	multi	Cellulose 10 Non-Fibrous 90	None Detected
03B / 777830	Gypsum Boartd	1st Floor Kitchen	multi	Cellulose 10 Non-Fibrous 90	None Detected
04A / 777831	Joint Compound	2nd Floor Kitchen	white	Non-Fibrous 100	None Detected
04B / 777832	Joint Compound	2nd Floor Living Room	white	Non-Fibrous 100	None Detected
04C / 777833	Joint Compound	2nd Floor Bedroom	white	Non-Fibrous 100	None Detected
04D / 777834	Joint Compound	1st Floor Office	white	Non-Fibrous 100	None Detected
04E / 777835	Joint Compound	1st Floor Kitchen	white	Non-Fibrous 100	None Detected
05A / 777836	Gypsum Board	2nd Floor Hallway, 2nd Layer	multi	Cellulose 10 Non-Fibrous 90	None Detected
05B / 777837	Gypsum Board	2nd Floor Hallway, 2nd Layer	multi	Cellulose 20 Non-Fibrous 80	None Detected
06A / 777838	Joint Compound	2nd Floor Hallway, 2nd Layer	white	Non-Fibrous 100	None Detected
06B / 777839	Joint Compound	2nd Floor Hallway, 2nd Layer	white	Non-Fibrous 100	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
06C / 777840	Joint Compound	2nd Floor Hallway, 2nd Layer	white	Non-Fibrous 100	None Detected
07A / 777841	White Skim Coat on Gypsum Board	1st Floor Office Wall	white	Non-Fibrous 100	None Detected
07B / 777842	White Skim Coat on Gypsum Board	1st Floor Kitchen Wall	white	Non-Fibrous 100	None Detected
07C / 777843	White Skim Coat on Gypsum Board	1st Floor Kitchen Ceiling	white	Non-Fibrous 100	None Detected
08A / 777844	White Skim Coat Plaster	2nd Floor Living Room Ceiling	white	Non-Fibrous 100	None Detected
08B / 777845	White Skim Coat Plaster	2nd Floor Bedroom Wall	white	Non-Fibrous 100	None Detected
08C / 777846	White Skim Coat Plaster	2nd Floor Bathroom Wall	white	Non-Fibrous 100	None Detected
08D / 777847	White Skim Coat Plaster	1st Floor Entry Hallway Ceiling	white	Non-Fibrous 100	None Detected
08E / 777848	White Skim Coat Plaster	1st Floor Living Room Ceiling	white	Non-Fibrous 100	None Detected
08F / 777849	White Skim Coat Plaster	1st Floor Bedroom Wall	white	Non-Fibrous 100	None Detected
08G / 777850	White Skim Coat Plaster	Basement Stairwell Wall	white	Non-Fibrous 100	None Detected
09A / 777851	Gray Base Coat Plaster	2nd Floor Living Room Ceiling	gray	Hair 2 Non-Fibrous 98	None Detected
09B / 777852	Gray Base Coat Plaster	2nd Floor Bedroom Wall	gray	Hair 3 Non-Fibrous 97	None Detected
09C / 777853	Gray Base Coat Plaster	2nd Floor Bathroom Wall	gray	Hair 3 Non-Fibrous 97	None Detected
09D / 777854	Gray Base Coat Plaster	1st Floor Entry Hallway Ceiling	gray	Hair 3 Non-Fibrous 97	None Detected
09E / 777855	Gray Base Coat Plaster	1st Floor Living Room Ceiling	gray	Hair 5 Non-Fibrous 95	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
09F / 777856	Gray Base Coat Plaster	1st Floor Bedroom Wall	gray	Hair 2 Non-Fibrous 98	None Detected
09G / 777857	Gray Base Coat Plaster	Basement Stairwell Wall	gray	Hair 5 Non-Fibrous 95	None Detected
10A / 777858	Gray Bottom Layer Plaster	3rd Floor Rear Bedroom	multi	Hair 5 Non-Fibrous 95	None Detected
10B / 777859	Gray Bottom Layer Plaster	2nd Floor Kitchen	gray	Hair 5 Non-Fibrous 95	None Detected
10C / 777860	Gray Bottom Layer Plaster	2nd Floor Living Room	gray	Hair 5 Non-Fibrous 95	None Detected
10D / 777861	Gray Bottom Layer Plaster	1st Floor Bedroom	gray	Hair 5 Non-Fibrous 95	None Detected
10E / 777862	Gray Bottom Layer Plaster	1st Floor Living Room	gray	Hair 5 Non-Fibrous 95	None Detected
11A / 777863	Textured Ceiling	2nd Floor Bedroom	white	Other 2 Non-Fibrous 98	None Detected
11B / 777864	Textured Ceiling	2nd Floor Living Room	white	Other 2 Non-Fibrous 98	None Detected
11C / 777865	Textured Ceiling	2nd Floor Hallway	white	Other 2 Non-Fibrous 98	None Detected
11D / 777866	Textured Ceiling	1st Floor Entry	multi	Other 2 Non-Fibrous 98	None Detected
11E / 777867	Textured Ceiling	1st Floor Living Room	white	Other 2 Non-Fibrous 98	None Detected
12A / 777868	White Chimney Coating	3rd Floor Front Bedroom	white	Non-Fibrous 100	None Detected
12B / 777869	White Chimney Coating	3rd Floor Front Bedroom	white	Non-Fibrous 100	None Detected
12C / 777870	White Chimney Coating	3rd Floor Rear Bedroom	white	Non-Fibrous 100	None Detected
13A / 777871	12x12 Wood Pattern Floor Tile	3rd Floor Rear Bedroom	gray	Non-Fibrous 100	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gorgas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
13B / 777872	12x12 Wood Pattern Floor Tile	1st Floor Bedroom	gray	Non-Fibrous 100	None Detected
14A / 777873	Clear Mastic Associated with 12x12 Wood Pattern Floor Tile	3rd Floor Rear Bedroom	clear	Non-Fibrous 100	None Detected
14B / 777874	Clear Mastic Associated with 12x12 Wood Pattern Floor Tile	1st Floor Bedroom	yellow	Non-Fibrous 100	None Detected
15A / 777875	12x12 Floor Tile with 6x6 Wood Pattern	2nd Floor Stairwell Landing	gray	Non-Fibrous 100	None Detected
15B / 777876	12x12 Floor Tile with 6x6 Wood Pattern	2nd Floor Stairwell Landing	gray	Non-Fibrous 100	None Detected
16A / 777877	Clear Mastic Associated with 12x12 Floor Tile with 6x6 Wood Pattern	2nd Floor Stairwell Landing	clear	Non-Fibrous 100	None Detected
16B / 777878	Clear Mastic Associated with 12x12 Floor Tile with 6x6 Wood Pattern	2nd Floor Stairwell Landing	clear	Non-Fibrous 100	None Detected
17A / 777879	Sheet Flooring	2nd Floor Kitchen	multi	Cellulose 50 Non-Fibrous 50	None Detected
17B / 777880	Sheet Flooring	2nd Floor Kitchen	multi	Cellulose 50 Non-Fibrous 50	None Detected
18A / 777881	Black Paper Associated with Sheet Flooring	2nd Floor Kitchen	black	Cellulose 70 Non-Fibrous 30	None Detected
18B / 777882	Black Paper Associated with Sheet Flooring	2nd Floor Kitchen	black	Cellulose 70 Non-Fibrous 30	None Detected
19A / 777883	Brown Mastic Associated with Sheet Flooring Black Paper	2nd Floor Kitchen	brown	Non-Fibrous 100	None Detected
19B / 777884	Brown Mastic Associated with Sheet Flooring Black Paper	2nd Floor Kitchen	brown	Non-Fibrous 100	None Detected
20A / 777885	Yellow Cove Base Mastic	3rd Floor Entry Room	tan	Non-Fibrous 100	None Detected
20B / 777886	Yellow Cove Base Mastic	3rd Floor Entry Room	tan	Non-Fibrous 100	None Detected
21A / 777887	White Ceramic Wall Tile Grout	2nd Floor Kitchen	gray	Non-Fibrous 100	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
21B / 777888	White Ceramic Wall Tile Grout	2nd Floor Kitchen	gray	Non-Fibrous 100	None Detected
22A / 777889	White Ceramic Wall Tile Mastic	2nd Floor Kitchen	white	Non-Fibrous 100	None Detected
22B / 777890	White Ceramic Wall Tile Mastic	2nd Floor Kitchen	white	Non-Fibrous 100	None Detected
23A / 777891	Gray Ceramic Floor Tile Grout	2nd Floor Bathroom	gray	Non-Fibrous 100	None Detected
23B / 777892	Gray Ceramic Floor Tile Grout	2nd Floor Bathroom	gray	Non-Fibrous 100	None Detected
24A / 777893	Ceramic Floor Tile Backer Board	2nd Floor Bathroom	gray	Cellulose 50 Non-Fibrous 50	None Detected
24B / 777894	Ceramic Floor Tile Backer Board	2nd Floor Bathroom	gray	Cellulose 50 Non-Fibrous 50	None Detected
25A / 777895	Gray Ceramic Floor Tile Thinset	2nd Floor Bathroom	gray	Non-Fibrous 100	None Detected
25B / 777896	Gray Ceramic Floor Tile Thinset	2nd Floor Bathroom	gray	Non-Fibrous 100	None Detected
26A / 777897	White Ceramic Wall Tile Grout	2nd Floor Bathroom	white	Non-Fibrous 100	None Detected
26B / 777898	White Ceramic Wall Tile Grout	2nd Floor Bathroom	white	Non-Fibrous 100	None Detected
27A / 777899	White Ceramic Wall Tile Thinset	2nd Floor Bathroom	white	Non-Fibrous 100	None Detected
27B / 777900	White Ceramic Wall Tile Thinset	2nd Floor Bathroom	white	Non-Fibrous 100	None Detected
28A / 777901	White Ceramic Wall Tile Grout	1st Floor Bathroom	white	Non-Fibrous 100	None Detected
28B / 777902	White Ceramic Wall Tile Grout	1st Floor Bathroom	white	Non-Fibrous 100	None Detected
29A / 777903	Gray Ceramic Wall Tile Thinset	1st Floor Bathroom	gray	Non-Fibrous 100	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
29B / 777904	Gray Ceramic Wall Tile Thinset	1st Floor Bathroom	gray	Non-Fibrous 100	None Detected
30A / 777905	Gray Ceramic Floor Tile Grout	1st Floor Bathroom	gray	Non-Fibrous 100	None Detected
30B / 777906	Gray Ceramic Floor Tile Grout	1st Floor Bathroom	gray	Non-Fibrous 100	None Detected
31A / 777907	Gray Ceramic Floor Tile Thinset	1st Floor Bathroom	gray	Non-Fibrous 100	None Detected
31B / 777908	Gray Ceramic Floor Tile Thinset	1st Floor Bathroom	gray	Non-Fibrous 100	None Detected
32A / 777909	White Ceramic Floor Tile Grout	1st Floor Bathroom Shower	white	Non-Fibrous 100	None Detected
32B / 777910	White Ceramic Floor Tile Grout	1st Floor Bathroom Shower	white	Non-Fibrous 100	None Detected
33A / 777911	Yellow Ceramic Floor Tile Mastic	1st Floor Bathroom Shower	tan	Non-Fibrous 100	None Detected
33B / 777912	Yellow Ceramic Floor Tile Mastic	1st Floor Bathroom Shower	tan	Non-Fibrous 100	None Detected
34A / 777913	Gray Ceramic Floor Tile Thinset	1st Floor Bathroom Shower	gray	Non-Fibrous 100	None Detected
34B / 777914	Gray Ceramic Floor Tile Thinset	1st Floor Bathroom Shower	gray	Non-Fibrous 100	None Detected
35A / 777915	Tan Paper under Wood Floors	2nd Floor Bedroom	tan	Cellulose 95 Non-Fibrous 5	None Detected
35B / 777916	Tan Paper under Wood Floors	2nd Floor Living Room	tan	Cellulose 95 Non-Fibrous 5	None Detected
36A / 777917	Black Paper under Wood Floors	1st Floor Bedroom	black	Cellulose 80 Non-Fibrous 20	None Detected
36B / 777918	Black Paper under Wood Floors	1st Floor Living Room	black	Cellulose 80 Non-Fibrous 20	None Detected
37A / 777919	Brown Paper under Wood Floors	1st Floor Kitchen	brown	Cellulose 90 Non-Fibrous 10	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
37B 777920	Brown Paper under Wood Floors	1st Floor Kitchen	brown	Cellulose 90 Non-Fibrous 10	None Detected
38A 777921	Brown Wall Panel Mastic	2nd Floor Bedroom	brown	Non-Fibrous 100	None Detected
38B 777922	Brown Wall Panel Mastic	2nd Floor Bedroom	brown	Non-Fibrous 100	None Detected
39A 777923	Yellow Wall Panel Mastic	2nd Floor Kitchen	yellow	Non-Fibrous 100	None Detected
39B 777924	Yellow Wall Panel Mastic	2nd Floor Kitchen	yellow	Non-Fibrous 100	None Detected
40A 777925	Gray Sink Coating	2nd Floor Kitchen	gray	Non-Fibrous 100	None Detected
40B 777926	Gray Sink Coating	1st Floor Kitchen	gray	Non-Fibrous 100	None Detected
41A 777927	Flue Packing Cement	Basement on Chimney	gray	Non-Fibrous 97	**Detected** **Chrysotile 3**
41B 777928	Flue Packing Cement	Basement on Chimney			Not Analyzed
42A 777929	Tan Construction Caulk	Basement @ Beams & 1st Floor	tan	Non-Fibrous 100	None Detected
42B 777930	Tan Construction Caulk	Basement @ Beams & 1st Floor	tan	Non-Fibrous 100	None Detected
43A 777931	Pipe Insulation	Basement	multi	Non-Fibrous 30	**Detected** **Chrysotile 70**
43B 777932	Pipe Insulation	Basement			Not Analyzed
43C 777933	Pipe Insulation	Basement			Not Analyzed
44A 777934	Roof Shingle	Roof	black	Cellulose 20 Non-Fibrous 80	None Detected
44B 777935	Roof Shingle	Roof	black	Cellulose 20 Non-Fibrous 80	None Detected

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

Rich Murphy
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.01993
89 Maple St.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
45A / 777936	Black Mastic Associated with Roof Shingle	Roof	black	Non-Fibrous 100	None Detected
45B / 777937	Black Mastic Associated with Roof Shingle	Roof	black	Non-Fibrous 100	None Detected
46A / 777938	Black Paper under Roof Shingle	Roof	black	Cellulose 70 Non-Fibrous 30	None Detected
46B / 777939	Black Paper under Roof Shingle	Roof	black	Cellulose 70 Non-Fibrous 30	None Detected
47A / 777940	Black Caulk along Roof Edge	Roof	black	Non-Fibrous 95	**Detected** **Chrysotile 5**
47B / 777941	Black Caulk along Roof Edge	Roof			Not Analyzed
48A / 777942	Black Exhaust Pipe Caulk	Roof	black	Fiberglass 2 Non-Fibrous 98	None Detected
48B / 777943	Black Exhaust Pipe Caulk	Roof	black	Fiberglass 2 Non-Fibrous 98	None Detected
49A / 777944	Cement Shingle Siding	Exterior Front Side	gray	Non-Fibrous 90	**Detected** **Chrysotile 10**
49B / 777945	Cement Shingle Siding	Exterior Rear Side			Not Analyzed
50A / 777946	Black Felt Paper behind Siding	Exterior Front Side	black	Cellulose 80 Non-Fibrous 20	None Detected
50B / 777947	Black Felt Paper behind Siding	Exterior Rear Side	black	Cellulose 80 Non-Fibrous 20	None Detected
51A / 777948	Tan Exterior Trim Caulk	Exterior Rear Window	tan	Non-Fibrous 100	None Detected
51B / 777949	Tan Exterior Trim Caulk	Exterior Front Door	tan	Non-Fibrous 98	**Detected** **Chrysotile 2**

Sampled: October 06, 2021 **Received:** October 07, 2021 **Analyzed:** October 11, 2021

Tuesday 12 October 2021

Analyzed by: Erik Gongas **Batch:** 70145

CHAIN OF CUSTODY

EPA/600/R-93/116

Client: EFI Global

Address:

Project Site & #: 89 Maple St, Waltham

Phone / email address:

Contact: R. Murphy

Relinquish by/date:

Received by/date: 10/7/21

# of Samples Received: 126

Asbestos Identification Lab
165 New Boston St.
Suite 227
Woburn, MA 01801
(781)932-9600
www.asbestosidentificationlab.com

Date Sampled:

BATCH# 70145

Rev 06/16

Turnaround Time	Sample Method
☐ Less 3 Hrs	☒ Bulk
☐ Same Day	☐ Soil
☐ Next Day	☐ Wipe
☒ ~~Two Day~~ 3 day	☐ Point Count

Stop on 1st Positive? Yes/No

Notify Method: Mail/E-Mail/Verbal

Analyzed By: [signature]

Date: 10/11/2021

Temp in Celsius = 4

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
177834	01A	Material / Location	0	Gy	~	Gr	y	Chrysotile, Amosite, Crocidolite, Tremolite, Anthophyllite, Actinolite											R 2				98
35	01B	Material / Location	0	Cream	~	Gr	y	Chrysotile, Amosite, Crocidolite, Tremolite, Anthophyllite, Actinolite											R 20				80
36	02A	Material / Location	0	Wht	y	Gr	y	Chrysotile, Amosite, Crocidolite, Tremolite, Anthophyllite, Actinolite															100

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 Material / Location	Stereo Scope % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI ∥	⊥	Non-Asbestos Percentage (%) Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
27	02B	Material Location	0	Off-wht	[illegible]	Gry	[illegible]	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
28	02C	Material Location	0	Off-wht	[illegible]	Gry	[illegible]	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite											10				100
29	03A	Material Location	0	wt	[illegible]	Gry	[illegible]	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite											10				90
30	03B	Material Location	0	wt	[illegible]	Gry	[illegible]	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite											10				90
31	04A	Material Location	0	Off-wht	[illegible]	Gry	[illegible]	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ‖	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
32	04B	Material Location	0	Wh	y	Bry	/	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
33	04C	Material Location	0	Wh	y	Bry	/	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
34	04D	Material Location	0	Wh	n	Brw		Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
35	04E	Material Location	0	Wh	n	Bry	/	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
36	05A	Material Location	0	Mr	n	Bry	Ry	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite											10				90

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
37	05B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite											20				80
								Anthophyllite															
								Actinolite															
38	06A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
39	06B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
40	06C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
41	07A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
42	07B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	Chry	Chry				Tremolite															14
								Anthophyllite															
								Actinolite															
43	07C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	Chry	Chry				Tremolite															14
								Anthophyllite															
								Actinolite															
44	08A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	Chry	Chry				Tremolite															14
								Anthophyllite															
								Actinolite															
45	08B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	Chry	Chry				Tremolite															13
								Anthophyllite															
								Actinolite															
46	08C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	Chry	Chry				Tremolite															13
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties							RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism		=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
47	08D	Material						Chrysotile																
								Amosite																
								Crocidolite																
		Location	Chy	Gry				Tremolite																100
								Anthophyllite																
								Actinolite																
48	08E	Material						Chrysotile																
								Amosite																
								Crocidolite																
		Location	Chy	Gry				Tremolite																100
								Anthophyllite																
								Actinolite																
49	08F	Material						Chrysotile																
								Amosite																
								Crocidolite																
		Location	Chy	Gry				Tremolite																100
								Anthophyllite																
								Actinolite																
50	08G	Material						Chrysotile																
								Amosite																
								Crocidolite																
		Location	Chy	Gry				Tremolite																100
								Anthophyllite																
								Actinolite																
51	09A	Material						Chrysotile																
								Amosite																
								Crocidolite														1		
		Location	Chy	Gry				Tremolite														2		98
								Anthophyllite																
								Actinolite																

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ~71 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
52	0913	Material	0%	~	~	~	~	Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												3			30
								Anthophyllite															
								Actinolite															
53	09C	Material	0%	~	~	~	~	Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												3			97
								Anthophyllite															
								Actinolite															
54	091D	Material	0%	~	~	~	~	Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												3			97
								Anthophyllite															
								Actinolite															
55	09E	Material	0%	~	~	~	~	Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												5			95
								Anthophyllite															
								Actinolite															
56	09F	Material	0%	~	~	~	~	Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												2			98
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
57	09G	Material						Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												5			95
								Anthophyllite															
								Actinolite															
58	10K	Material						Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												5			95 EG
								Anthophyllite															
								Actinolite															
59	103	Material						Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												5			95
								Anthophyllite															
								Actinolite															
60	10C	Material						Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												5			95
								Anthophyllite															
								Actinolite															
61	10P	Material						Chrysotile												C			
		Location						Amosite															
								Crocidolite															
								Tremolite												5			95
								Anthophyllite															
								Actinolite															

Page 9 of ____

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 Material / Location	% of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI ∥	RI ⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
62	10E	Material	0	gy	[illegible]	[illegible]	[illegible]	Chrysotile												5			95
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
63	11A	Material	0	wh	y	gr	y	Chrysotile														tr 2	98
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
64	11B	Material	0	wh	y	gy	y	Chrysotile														tr 2	98
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
65	11C	Material	0	wh	y	gr	y	Chrysotile														tr 2	98
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
66	11D	Material	0	mc	y	gy	y	Chrysotile														tr 2	98
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties							RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism		=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
67	11E	Material						Chrysotile															tr	
		Location						Amosite																
								Crocidolite																
								Tremolite															2	98
								Anthophyllite																
								Actinolite																
68	12A	Material						Chrysotile																
		Location						Amosite																
								Crocidolite																
								Tremolite																1%
								Anthophyllite																
								Actinolite																
69	12B	Material						Chrysotile																
		Location						Amosite																
								Crocidolite																
								Tremolite																1%
								Anthophyllite																
								Actinolite																
70	12C	Material						Chrysotile																
		Location						Amosite																
								Crocidolite																
								Tremolite																1%
								Anthophyllite																
								Actinolite																
71	13B	Material						Chrysotile																
		Location						Amosite																
								Crocidolite																
								Tremolite																1%
								Anthophyllite																
								Actinolite																

Temp in Celcius = 24

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
12	13B	Material						Chrysotile															
		Location	0	gy	s	s	s	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															15
13	14A	Material						Chrysotile															
		Location	2	cl	s	s	s	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															10
14	14B	Material						Chrysotile															
		Location	2	gy	s	s	s	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															15
15	15A	Material						Chrysotile															
		Location	0	gy	s	s	s	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															15
16	15B	Material						Chrysotile															
		Location	0	gy	s	s	s	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															15

Page 12 of ____

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 0 — Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
77	16A	Material						Chrysotile															
								Amosite															
			0	CY	Y	[illegible]	N	Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
78	16B	Material						Chrysotile															
								Amosite															
			0	CY	Y	[illegible]	N	Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
79	17A	Material						Chrysotile															
								Amosite											R				
			0	MC	N	[illegible]	N	Crocidolite															
		Location						Tremolite											50				50
								Anthophyllite															
								Actinolite															
80	17B	Material						Chrysotile															
								Amosite											R				
			0	MC	N	[illegible]	N	Crocidolite															
		Location						Tremolite											50				50
								Anthophyllite															
								Actinolite															
81	18A	Material						Chrysotile															
								Amosite											R				
			0	BR	N	R	N	Crocidolite															
		Location						Tremolite											70				30
								Anthophyllite															
								Actinolite															

Ke

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 71 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
82	18B	Material						Chrysotile											12				
		Location	C	Br				Amosite															
								Crocidolite															
								Tremolite											70				30
								Anthophyllite															
								Actinolite															
83	19A	Material						Chrysotile															
		Location	C	Br				Amosite															
								Crocidolite															
								Tremolite															15
								Anthophyllite															
								Actinolite															
84	19B	Material						Chrysotile															
		Location	C	Br				Amosite															
								Crocidolite															
								Tremolite															10
								Anthophyllite															
								Actinolite															
85	20A	Material						Chrysotile															
		Location	C	T				Amosite															
								Crocidolite															
								Tremolite															10
								Anthophyllite															
								Actinolite															
86	20B	Material						Chrysotile															
		Location	C	T				Amosite															
								Crocidolite															
								Tremolite															10
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties							RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism		=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
87	21A	Material						Chrysotile																
		Location	O	Gy	S	Sm	W	Amosite																
								Crocidolite																
								Tremolite																1W
								Anthophyllite																
								Actinolite																
88	21B	Material						Chrysotile																
		Location	O	Gy	S	Sm	W	Amosite																
								Crocidolite																
								Tremolite																1W
								Anthophyllite																
								Actinolite																
89	22A	Material						Chrysotile																
		Location	O	Gy	S	Sm	W	Amosite																
								Crocidolite																
								Tremolite																1C
								Anthophyllite																
								Actinolite																
90	22B	Material						Chrysotile																
		Location	O	Gy	S	Sm	W	Amosite																
								Crocidolite																
								Tremolite																1W
								Anthophyllite																
								Actinolite																
91	23A	Material						Chrysotile																
		Location	O	Gy	S	Sm	W	Amosite																
								Crocidolite																
								Tremolite																1W
								Anthophyllite																
								Actinolite																

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
92	2313	Material	0	3	3	3	2	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															15
								Anthophyllite															
								Actinolite															
93	24A	Material	0	3	2	1	2	Chrysotile															
		Location						Amosite															
								Crocidolite												12			
								Tremolite											8				5
								Anthophyllite															
								Actinolite															
94	2413	Material	0	3	2	1	2	Chrysotile															
		Location						Amosite															
								Crocidolite											12				
								Tremolite											8				5
								Anthophyllite															
								Actinolite															
95	2510	Material	0	3	3	3	2	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															15
								Anthophyllite															
								Actinolite															
96	2513	Material	0	3	3	3	2	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															15
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
97	26A	Material Location	0	wht	y	gr	w	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
98	26B	Material Location	0	wht	y	gr	w	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
99	27A	Material Location	0	wht	y	gr	w	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
00	27B	Material Location	0	wht	y	gr	w	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100
01	28A	Material Location	0	wht	y	gr	w	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite															100

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 24 / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties						RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	∥	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
02	2813	Material						Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															1w
								Anthophyllite															
								Actinolite															
03	2914	Material						Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															1w
								Anthophyllite															
								Actinolite															
04	2913	Material						Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															1w
								Anthophyllite															
								Actinolite															
05	3014	Material						Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															1w
								Anthophyllite															
								Actinolite															
06	3013	Material						Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															1w
								Anthophyllite															
								Actinolite															

Page 18 of

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
07	31A	Material	0	Gry	Y	Gr	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
08	31B	Material	0	Gry	Y	Gr	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
09	32A	Material	0	Wht	Y	Gr	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
10	32B	Material	0	Wht	Y	Gr	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															
11	33A	Material	0	T	Y	Gr	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															100
								Anthophyllite															
								Actinolite															

Temp in Celcius = 24

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties							RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism		=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
12	33B	Material						Chrysotile																
		Location	0	T	H	R	W	Amosite																
								Crocidolite																
								Tremolite																15
								Anthophyllite																
								Actinolite																
13	34A	Material						Chrysotile																
		Location	2	Gy	H	R	W	Amosite																
								Crocidolite																
								Tremolite																15
								Anthophyllite																
								Actinolite																
14	34B	Material						Chrysotile																
		Location	0	Gy	H	R	W	Amosite																
								Crocidolite																
								Tremolite																15
								Anthophyllite																
								Actinolite																
15	35A	Material						Chrysotile																
		Location	0	T	N	R	W	Amosite																
								Crocidolite																
								Tremolite												95				5
								Anthophyllite																
								Actinolite																
16	35B	Material						Chrysotile																
		Location	0	T	N	R	W	Amosite																
								Crocidolite																
								Tremolite												95				5
								Anthophyllite																
								Actinolite																

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties						RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
17	364	Material						Chrysotile															
								Amosite															
								Crocidolite											12				
		Location	U	blk	~	R	~	Tremolite											80				20
								Anthophyllite															
								Actinolite															
18	360	Material						Chrysotile															
								Amosite															
								Crocidolite											12				
		Location	U	blk	~	R	~	Tremolite											80				20
								Anthophyllite															
								Actinolite															
19	374	Material						Chrysotile															
								Amosite															
								Crocidolite											10				
		Location	U	blk	~	F	~	Tremolite											90				10
								Anthophyllite															
								Actinolite															
20	373	Material						Chrysotile															
								Amosite															
								Crocidolite											12				
		Location	U	blk	~	R	F	Tremolite											90				10
								Anthophyllite															
								Actinolite															
21	384	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	U	blk	~	~	~	Tremolite															10
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ‖	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
22	38B	Material Location	C	hry	y	Bw		Chrysotile															100
								Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
23	39A	Material Location	C	y	y	Bw		Chrysotile															100
								Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
24	39B	Material Location	C	y	y	Bw		Chrysotile															100
								Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
25	40A	Material Location	0	gy	y	Bw		Chrysotile															100
								Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
26	40B	Material Location	0	gy	y	Bw		Chrysotile															100
								Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties						RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	=	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
27	411A	Material	0	~	~	~	Y	Chrysotile	3	W	=	+	L	~	LOW	LOW							
		Location						Amosite															
								Crocidolite															
								Tremolite															97
								Anthophyllite															
								Actinolite															
28	413	Material	~~0~~					Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															FEA DNA
								Anthophyllite															
								Actinolite															
29	421A	Material	0	T	~	~	~	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															10
								Anthophyllite															
								Actinolite															
30	421D	Material	0	T	~	~	~	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															10
								Anthophyllite															
								Actinolite															
31	413A	Material	0	me	~	~	Y	Chrysotile	3	W	=	+	L	~	LOW	LOW							
		Location						Amosite															
								Crocidolite															
								Tremolite															30
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 — Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ‖	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous	
32	43B	Material						Chrysotile																DNA
								Amosite																
								Crocidolite																
		Location						Tremolite																
								Anthophyllite																
								Actinolite																
33	43C	Material						Chrysotile																DNA
								Amosite																
								Crocidolite																
		Location						Tremolite																
								Anthophyllite																
								Actinolite																
34	44A	Material	0	blk	~	[illegible]	~	Chrysotile											[illegible]					
								Amosite																
								Crocidolite																
		Location						Tremolite											20				80	
								Anthophyllite																
								Actinolite																
35	44B	Material	0	blk	~	[illegible]	~	Chrysotile											[illegible]					
								Amosite																
								Crocidolite																
		Location						Tremolite											20				80	
								Anthophyllite																
								Actinolite																
36	45A	Material	0	blk	~	[illegible]	~	Chrysotile																
								Amosite																
								Crocidolite																
		Location						Tremolite															100	
								Anthophyllite																
								Actinolite																

Page 24 of 26

Temp in Celcius = 21

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
37	45B	Material	C	blk	~	~	~	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															10
								Actinolite															
38	46A	Material	O	blk	~	F	~	Chrysotile															
		Location						Amosite															
								Crocidolite												2			
								Tremolite															
								Anthophyllite												70			30
								Actinolite															
39	46B	Material	O	blk	~	F	~	Chrysotile															
		Location						Amosite															
								Crocidolite												2			
								Tremolite															
								Anthophyllite												70			30
								Actinolite															
40	47A	Material	O	blk	~	F	~	Chrysotile	5	~	=	+	-	~	HIGH	HIGH							
		Location						Amosite															
								Crocidolite															95
								Tremolite															5
								Anthophyllite															
								Actinolite															
41	47B	Material	O	blk	~	F	~	Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															5
								Anthophyllite															
								Actinolite															

EC

EC
DNA

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 — Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
42	48A	Material	0	blky		Gran		Chrysotile									FG 2						98
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
43	48B	Material	0	blky		Gran		Chrysotile									FG 2						98
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
44	49A	Material	0	Gy	~	Fib	N	Chrysotile	10	W	=	+	C	N	[illegible]	[illegible]							90
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
45	49B	Material	Ø					Chrysotile															
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															
46	50A	Material	0	blk	~	F	N	Chrysotile											R 10				90
		Location						Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = 21 / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
47	503	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite											20			20	
								Anthophyllite															
								Actinolite															
48	514	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															10
								Anthophyllite															
								Actinolite															
117949	513	Material						Chrysotile	2	3	=	+	+	+	1.57	1.55							
								Amosite															
								Crocidolite															
		Location						Tremolite														98	
								Anthophyllite															
								Actinolite															
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															

efi global

BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	Rich Murphy	**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:	020.01993 89 Maple St, Waltham, MA		
Email Report to:	Rich.Murphy@efiglobal.com Jennifer.Bettano@efiglobal.com		
Alternate (Your Email):			

Requested Turnaround Time:

☐ 3hour	☐ 6 hour	☐ 1 day (24hr)	☐ 2 day (48hr)	☑ 3 day (72 hr)

Media and Methodology

Type of Analysis:	Asbestos PLM	**Check for Positive Stop:**	☑
Notes:	Please analyze all plaster and joint compound samples.		

Sample ID	Type of Material	Location
01A	Gypsum Board	3rd Floor Front Bedroom
01B	↓	3rd Floor Rear Bedroom
02A	Joint Compound	3rd Floor Front Bedroom
02B	↓	3rd Floor Rear Bedroom
02C	↓	3rd Floor Entry Room
03A	Gypsum Board	2nd Floor Kitchen
03B	↓	1st Floor Kitchen
04A	Joint Compound	2nd Floor Kitchen
04B	↓	2nd Floor Living Room
04C	↓	2nd Floor Bedroom
04D	↓	1st Floor office
04E	↓	1st Floor Kitchen

Total Number of Samples Submitted: 126 Date Collected: 10/6/2021

Samplers Name: Rich Murphy Samplers Signature: [signature]

Relinquished By (EFI): Rich Murphy Date: 10/6/2021 Time: _____

Received By (Lab): [signature] 10/7/21 Date: _____ Time: _____

efi global

Sample ID	Type of Material	Location
05A	Gypsum Board	2nd Floor Hallway 2nd Layer
05B	↓	↓
06A	Joint Compound	2nd Floor Hallway 2nd Layer
06B	↓	↓
06C	↓	↓
07A	white skim coat on Gypsum Board	1st Floor office wall
07B	↓	1st Floor Kitchen wall
07C	↓	1st Floor Kitchen Ceiling
08A	white skim coat Plaster	2nd Floor Living Room Ceiling
08B	↓	2nd Floor Bedroom wall
08C	↓	2nd Floor Bathroom wall
08D	↓	1st Floor Entry Hallway Ceiling
08E	↓	1st Floor Living Room Ceiling
08F	↓	1st Floor Bedroom wall
08G	↓	Basement stairwell wall
09A	Gray Base Coat Plaster	2nd Floor Living Room Ceiling
09B	↓	2nd Floor Bedroom wall
09C	↓	2nd Floor Bathroom wall
09D	↓	1st Floor Entry Hallway Ceiling
09E	↓	1st Floor Living Room Ceiling
09F	↓	1st Floor Bedroom wall
09G	↓	Basement stairwell wall
10A	Gray Bottom Layer Plaster	2nd Floor Rear Bedroom
10B	↓	2nd Floor Kitchen
10C	↓	2nd Floor Living Room
10D	↓	1st Floor Bedroom
10E	↓	1st Floor Living Room
11A	Textured Ceiling	2nd Floor Bedroom
11B	↓	2nd Floor Living Room
11C	↓	2nd Floor Hallway

efi global

Sample ID	Type of Material	Location
11D	Textured Ceiling	1st Floor Entry
11E	↓	1st Floor Living Room
12A	white chimney coating	3rd Floor Front Bedroom
12B	↓	3rd Floor Front Bedroom
13C	↓	3rd Floor Rear Bedroom
13A	12x12 wood Pattern Floor Tile	3rd Floor Rear Bedroom
13B	↓	1st Floor Bedroom
14A	Clear Mastic Associated with 12x12 wood Pattern Floor Tile	3rd Floor Rear Bedroom
14B	↓	1st Floor Bedroom
15A	12x12 Floor Tile with 6x6 wood Pattern	2nd Floor Stairwell Landing
15B	↓	↓
16A	Clear Mastic Associated with 12x12 Floor Tile with 6x6 wood Pattern	
16B	↓	
17A	Sheet Flooring	2nd Floor Kitchen
17B	↓	↓
18A	Black Paper Associated with Sheet Flooring	
18B	↓	
19A	Brown Mastic Associated with Sheet Flooring Black Paper	
19B	↓	↓
20A	Yellow Cove Base Mastic	3rd Floor Entry Room
20B	↓	↓
21A	white Ceramic wall Tile Grout	2nd Floor Kitchen
21B	↓	↓
22A	white Ceramic wall Tile Mastic	
22B	↓	↓
23A	Gray Ceramic Floor Tile Grout	2nd Floor Bathroom
23B	↓	↓
24A	Ceramic Floor Tile Backer Board	
24B	↓	
25A	Gray Ceramic Floor Tile Thinset	↓

efi global

Sample ID	Type of Material	Location
25B	Gray Ceramic Floor Tile Thinset	2nd Floor Bathroom
26A	White Ceramic wall Tile Grout	↓
26B	↓	↓
27A	White Ceramic wall Tile Thinset	↓
27B	↓	↓
28A	White Ceramic wall Tile Grout	1st Floor Bathroom
28B	↓	↓
29A	Gray Ceramic wall Tile Thinset	↓
29B	↓	↓
30A	Gray Ceramic Floor Tile Grout	↓
30B	↓	↓
31A	Gray Ceramic Floor Tile Thinset	↓
31B	↓	↓
32A	White Ceramic Floor Tile Grout	1st Floor Bathroom shower
32B	↓	↓
33A	Yellow Ceramic Floor Tile Mastic	↓
33B	↓	↓
34A	Gray Ceramic Floor Tile Thinset	↓
34B	↓	↓
35A	Tan Paper under wood Floors	2nd Floor Bedroom
35B	↓	2nd Floor Living Room
36A	Black Paper under wood Floors	1st Floor Bedroom
36B	↓	1st Floor Living Room
37A	Brown Paper under wood Floors	1st Floor Kitchen
37B	↓	1st Floor Kitchen
38A	Brown wall Panel Mastic	2nd Floor Bedroom
38B	↓	↓
39A	Yellow wall Panel Mastic	2nd Floor Kitchen
39B	↓	↓
40A	Gray Sink Coating	2nd Floor Kitchen

efi global

Sample ID	Type of Material	Location
40B	Gray Sink Coating	1st Floor Kitchen
41A	Flue Packing Cement	Basement on chimney
41B	↓	↓
42A	Tar Construction Caulk	Basement @ Beams & 1st Floor
42B	↓	↓
43A	Pipe Insulation	Basement
43B	↓	↓
43C	↓	↓
44A	Roof Shingle	Roof
44B	↓	↓
45A	Black Mastic Associated with Roof Shingle	
45B	↓	↓
46A	Black Paper under Roof Shingle	Roof
46B	↓	↓
47A	Black Caulk Above Roof Edge	Roof
47B	↓	↓
48A	Black Exhaust Pipe Caulk	Roof
48B	↓	↓
49A	Cement Shingle Siding	Exterior Front Side
49B	↓	Exterior Rear Side
50A	Black Felt Paper Behind Siding	Exterior Front Side
50B	↓	Exterior Rear Side
51A	Tar Exterior Trim Caulk	Exterior Rear window
51B	↓	Exterior Front Door

ATTACHMENT C

LEAD PAINT LABORATORY REPORT

Mike Manning
Asbestos Identification Lab
165 New Boston Street, Ste 227
Woburn, MA 01801
781-932-9600
www.AsbestosIdentificationLab.com

Dear Rich Murphy,

Enclosed please find 15 samples tested for **Lead** from project: **89-91 Maple St., Waltham, MA.** Asbestos Identification Laboratory subcontracted the samples to be analyzed by a NVLAP accredited laboratory.

Thank you

Michael Manning

Asbestos Identification Laboratory

October 12, 2021

SanAir Technologies Laboratory

The Identification Specialists

Analysis Report prepared for Asbestos Identification Laboratory

Report Date: 10/12/2021

Project Name: 89-91 Maple St. Waltham, MA

Project #: 020.01993

SanAir ID#: 21054572

Lab ID # 162952

1551 Oakbridge Dr. Suite B | Powhatan, Virginia 23139-8061
888.895.1177 | 804.897.1177 | fax: 804.897.0070 | IAQ@SanAir.com | SanAir.com

SanAir
Technologies Laboratory

SanAir ID Number
21054572
FINAL REPORT
10/12/2021 3:56:38 PM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

Project Number: 020.01993
P.O. Number:
Project Name: 89-91 Maple St. Waltham, MA
Collected Date: Not Provided on COC
Received Date: 10/8/2021 9:45:00 AM

Dear Michael Manning,

We at SanAir would like to thank you for the work you recently submitted. The 15 sample(s) were received on Friday, October 08, 2021 via FedEx. The final report(s) is enclosed for the following sample(s): PB01, PB02, PB03, PB04, PB05, PB06, PB07, PB08, PB09, PB10, PB11, PB12, PB13, PB14, PB15.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:
- Cover Letter
- Analysis on Test Family AA
- Disclaimers and Additional Information

Sample conditions:
- 15 samples in Good condition.

SanAir
Technologies Laboratory

SanAir ID Number
21054572
FINAL REPORT
10/12/2021 3:56:38 PM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

Project Number: 020.01993
P.O. Number:
Project Name: 89-91 Maple St. Waltham, MA
Collected Date: Not Provided on COC
Received Date: 10/8/2021 9:45:00 AM

Analyst: Baird, Marti
Test Method: SW846/M3050B/7000B

Lead Paint Analysis

PAINT Sample	Description	µg Pb In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
21054572 - 1	PB01	< 10	0.1116	89.6	<89.6	<0.009 %
	White Paint On Stove Foundation Interior Bsmt				µg/g (ppm)	By Weight
21054572 - 2	PB02	< 10	0.107	93.5	<93.5	<0.009 %
	White Paint On Wood Stair Railing Interior 1st Floor				µg/g (ppm)	By Weight
21054572 - 3	PB03	< 10	0.1047	95.5	<95.5	<0.010 %
	Gray Paint On Plaster Wall Interior 1st Floor				µg/g (ppm)	By Weight
21054572 - 4	PB04	< 10	0.1147	87.2	<87.2	<0.009 %
	White Paint On Wood Window Trim Interior 1st Floor				µg/g (ppm)	By Weight
21054572 - 5	PB05	1333	0.1057	94.6	12610	1.261 %
	White Paint On Wood Window Trim Exterior 1st Floor				µg/g (ppm)	By Weight
21054572 - 6	PB06	40	0.1142	87.6	350.7	0.035 %
	Gray Paint On Stair Tread Wood Interior 1st Floor				µg/g (ppm)	By Weight
21054572 - 7	PB07	170	0.1285	77.8	1324	0.132 %
	Gray Paint On Metal Radiator Interior 1st Floor				µg/g (ppm)	By Weight
21054572 - 8	PB08	< 10	0.1215	82.3	<82.3	<0.008 %
	Pink Paint On Gypsum Wall Interior 2nd Floor				µg/g (ppm)	By Weight
21054572 - 9	PB09	< 10	0.1048	95.4	<95.4	<0.010 %
	Gray Paint On Gypsum Wall Interior 2nd Floor				µg/g (ppm)	By Weight
21054572 - 10	PB10	138	0.1154	86.7	1196	0.120 %
	Pink Paint On Plaster Wall Interior 2nd Floor				µg/g (ppm)	By Weight
21054572 - 11	PB11	< 10	0.109	91.7	<91.7	<0.009 %

Method Reporting Limit <10 µg/0.1 g paint

Signature: Marti H. Baird
Date: 10/12/2021

Reviewed: Alissa Galassi
Date: 10/12/2021

SanAir
Technologies Laboratory

SanAir ID Number
21054572
FINAL REPORT
10/12/2021 3:56:38 PM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

Project Number: 020.01993
P.O. Number:
Project Name: 89-91 Maple St. Waltham, MA
Collected Date: Not Provided on COC
Received Date: 10/8/2021 9:45:00 AM

Analyst: Baird, Marti
Test Method: SW846/M3050B/7000B

Lead Paint Analysis

PAINT Sample	Description	µg Pb In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
	White Paint On Plaster Wall 2nd Floor Interior				µg/g (ppm)	By Weight
21054572 - 12	PB12	< 10	0.1094	91.4	<91.4	<0.009 %
	Gray Paint On Plaster Wall 2nd Floor Interior				µg/g (ppm)	By Weight
21054572 - 13	PB13	< 10	0.1172	85.3	<85.3	<0.009 %
	White Paint On Wood Wall Base Molding 2nd Floor				µg/g (ppm)	By Weight
21054572 - 14	PB14	< 10	0.1058	94.5	<94.5	<0.010 %
	Tan Paint On Gypsum Wall 3rd Floor Interior				µg/g (ppm)	By Weight
21054572 - 15	PB15	14040	0.1068	93.6	131500	13.150 %
	White Paint On Wood Window Trim Exterior 1st Floor				µg/g (ppm)	By Weight

Method Reporting Limit <10 µg/0.1 g paint

Signature: Marti H. Baird
Date: 10/12/2021

Reviewed: Alicia Galarneau
Date: 10/12/2021

Disclaimer

SanAir Technologies Laboratory, Inc. participates in the Environmental Lead Accreditation Program (ELAP) administered by AIHA-LAP, LLC (Lab ID162952). Refer to our accreditation certificate or www.aihaaccreditedlabs.org for an up to date list of the Fields of Testing for which we are accredited. SanAir also participates in the State of New York's DOH-ELAP (Lab Id 11983), and has met the EPA's NLLAP program standards. This report does not constitute endorsement by AIHA-LAP, LLC and/or any other U.S. governmental agencies; and may not be accredited by every local, state or federal regulatory agency.

This report is the sole property of the client named on the SanAir Technologies Laboratory chain-of-custody (COC). Neither results nor reports will be discussed with or released to any third party without our client's written permission. Final reports cannot be reproduced, except in full, without written authorization from SanAir Technologies Laboratory, Inc. The information provided in this report applies only to the samples submitted and is relevant only for the date, time, and location of sampling. SanAir is not responsible for sample collection or interpretation made by others. SanAir assumes no responsibility for information provided by the client on the COC such as project number, project name, collection dates, po number, special instructions, samples collected by, sample numbers, sample identifications, sample type, selected analysis type, flow rate, total volume or area, and start stop times that may affect the validity of the results in this report. SanAir Technologies Laboratory, Inc only assures the precision and accuracy of the data it generates and assumes no responsibility for errors or biasing that occur during collection prior to SanAir's receipt of the sample(s). SanAir's Method Detection Limits (MDL) and Reporting Limits (RL) have been derived using various materials meeting each accrediting agencies' standards. All quality control results are acceptable unless otherwise noted. Results are not corrected for blanks. For Lead Exposure Limits in Paint, refer to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards and State and Federal Regulations, where applicable.

SanAir Technologies Laboratory
1551 Oakbridge Dr STE B
Powhatan, VA 23139
804.897.1177 / 888.895.1177
Fax 804.897.0070
sanair.com

Metals & Lead Chain of Custody

Form 70, Revision 10, 05/18/18

SanAir ID Number: 2054572

Company: ASBESTOS ID LAB	Project #: 020.01993	Phone #: 781-932-9600
Address: 165 NEW BOSTON ST. SUIT	Project Name: 89-91 Maple St. Waltham, MA	Phone #: 781-932-9600
City, St., Zip: WOBURN, MA 01801	Date Collected:	Fax #: 781-932-9606
Samples Collected By:	P.O. Number:	Email:
Account #:	U.S. State Collected in:	Email:

Matrix Types

- [ ] Air (ug/m³)
- [ ] Wipe (ug/ft²)
- [x] Paint [ ] Soil [ ] Bulk (ug/g or ppm)
- [ ] Other:

Metals Analysis Types

- [x] Total Concentration of Lead
- [ ] Total Concentration of RCRA 8 Metals
- [ ] TCLP for Lead
- [ ] TCLP for RCRA 8 Metals
- [ ] ICP-total concentration of metals (please list metals):

Turn Around Time

- [ ] Same Day
- [ ] 1 Day
- [x] 2 days
- [ ] 3 Days
- [ ] 4 Days
- [ ] Standard (5 day)
- [ ] Other Test:

Sample #	Collection Date & Time	Sample Identification/Location	Flow Rate	Start Time	Stop Time	Volume (L) Area (Sq ft)

See attached

Special Instructions

Relinquished by	Date	Time	Received by	Date	Time
[signature]	10/7/21		[signature]	10/8/21	9:45 am

If no technician is provided, then the primary contact for your account will be selected. Unless scheduled, the turnaround time for all samples received after 3 pm EST will be logged in the next business day. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3hr TAT or a minimum charge of $150. A courier charge will be applied for same day and one-day turnaround times for offsite work. SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.

Page ___ of ___

2054572

Sample ID	Type of Material	Location
Pb 01	White paint on stone foundation	Interior Bsmt
Pb 02	White paint on wood stair railing	Interior 1st floor
Pb 03	Grey paint on Plaster wall	Interior 1st floor
Pb 04	White paint on wood window trim	Interior 1st floor
Pb 05	White paint on wood window trim	Exterior 1st floor
Pb 06	Gray Wood paint on Stair tread	Interior 1st floor
Pb 07	Gray paint on Radiator metal	Interior 1st floor
Pb 08	Pink paint on gypsum wall	Interior 2nd floor
Pb 09	Grey Paint on gypsum wall	Interior 2nd floor
Pb 10	Pink paint on plaster wall	Interior 2nd floor

Sample ID	Type of Material	Location
Pb 11	White paint on plaster wall	2nd floor interior
Pb 12	Grey paint on Plaster wall	2nd floor interior
Pb 13	White paint on wood wall base molding	2nd floor interior
Pb 14	Tan paint on gypsum wall	3rd flor Interior
Pb 15	White paint on wood window Trim	Exterior 1st floor

cm 10/10/21 9:45am

R069	033	0009		1 of 1	RESIDENTIAL
Map	Block	Lot	Unit	CARD	**City of Waltham**

	Total Card /	Total Parcel
APPRAISED:	682,900/	682,900
USE VALUE:	682,900/	682,900
ASSESSED:	682,900/	682,900

PROPERTY LOCATION

No	Alt No	Direction/Street/City
89		MAPLE ST, WALTHAM

OWNERSHIP

Unit #:

Owner 1:	CITY OF WALTHAM
Owner 2:	
Owner 3:	
Street 1:	610 MAIN STREET
Street 2:	
Twn/City:	WALTHAM
St/Prov:	MA
Cntry:	
Own Occ:	Y
Postal:	02452-
Type:	

PREVIOUS OWNER

Owner 1:	TARABELSI, PIERRE -
Owner 2:	-
Street 1:	89 MAPLE ST.
Twn/City:	WALTHAM
St/Prov:	MA
Cntry:	
Postal:	02453

NARRATIVE DESCRIPTION

This parcel contains 6,675 SQ. FT. of land mainly classified as MUNICPL with a TWO FAMILY Building built about 1920, having primarily ASBESTOS Exterior and 2268 Square Feet, with 2 Units, 2 Baths, 0 3/4 Bath, 0 HalfBath, 10 Rooms, and 4 Bdrms.

OTHER ASSESSMENTS

Code	Descrip/No	Amount	Com. Int

PROPERTY FACTORS

Item	Code	Description	%	Item	Code	Description
Z				water	1	TYPICAL
o				Sewer	2	SEWER
n				Electri		
Census:				Exmpt		
Flood Haz:						
D	0	test		Topo	2	ABOVE AV
s				Street	41	41
t				Gas:		

IN PROCESS APPRAISAL SUMMARY

Use Code	Land Size	Building Value	Yard Items	Land Value	Total Value
903	6675.000	390,200		292,700	682,900
Total Card	0.153	390,200		292,700	682,900
Total Parcel	0.153	390,200		292,700	682,900

Source: Market Adj Cost | Total Value per SQ unit /Card: 301.10 | /Parcel: 301.10

Legal Description

Entered Lot Size	
Total Land:	
Land Unit Type:	

User Acct	74822
GIS Ref	
GIS Ref	
Insp Date	03/15/06

Patriot Properties Inc.

PREVIOUS ASSESSMENT

Parcel ID: R069 033 0009

Tax Yr	Use	Cat	Bldg Value	Yrd Items	Land Size	Land Value	Total Value	Asses'd Value	Notes	Date
2022	903	FV	390,200	0	6,675.	292,700	682,900		Year End Roll	11/29/2021
2022	903	NC	390,200	0	6,675.	292,700	682,900		Year End Roll	10/29/2021
2021	903	FV	365,200	0	6,675.	264,800	630,000		Year End Roll	1/7/2021
2021	104	PTCH	339,900	0	6,675.	250,900	590,800	590,800	patch	6/23/2020
2020	104	FV	339,900	0	6,675.	250,900	590,800	590,800	Year End Roll	1/8/2020
2020	104	EX	339,900	0	6,675.	250,900	590,800	590,800	Year End Roll	11/20/2019
2020	104	NC	339,900	0	6,675.	250,900	590,800	590,800	Year End Roll	11/8/2019
2019	104	FV	271,800	0	6,675.	248,300	520,100	520,100	Year End Roll	1/4/2019

!74822!

PRINT

Date	Time
12/10/21	11:25:00

LAST REV

Date	Time
02/22/21	10:42:10
apro	

SALES INFORMATION

TAX DISTRICT: | PAT ACCT.: 74822

Grantor	Legal Ref	Type	Date	Sale Code	Sale Price	V	Tst	Verif	Notes
TARABELSI, PIER	75732-366		9/28/2020	INVOLVED GVT	723,291	No	No		
TARABELSI, PIER	59983-324-32		9/12/2012	FAMILY	10	No	No		
WEBER, ADELHEID	33337-104		7/27/2001		367,900	No	No		
FOLEY, SEAN M.,	31438-554		5/25/2000		300,000	No	No		
	20655-420		7/16/1990		165,000	Yes	No		
	14835147		12/1/1982		73,000	Yes	No		

USER DEFINED

Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
ASR Map:	
Fact Dist:	
Reval Dist:	
Year:	
LandReason:	
BldReason:	
CivilDistrict:	
Ratio:	

BUILDING PERMITS

Date	Number	Descrip	Amount	C/O	Last Visit	Fed Code	F. Descrip	Comment

ACTIVITY INFORMATION

Date	Result	By	Name
3/15/2006	MEASURED	294	DENNIS MATTE

Sign: VERIFICATION OF VISIT NOT DATA __/__/__

LAND SECTION (First 7 lines only)

Use Code	Description	LUC Fact	No of Units	Depth / PriceUnits	Unit Type	Land Type	LT Factor	Base Value	Unit Price	Adj	Neigh	Neigh Influ	Neigh Mod	Infl 1	%	Infl 2	%	Infl 3	%	Appraised Value	Alt Class	%	Spec Land	J Code	Fact	Use Value	Notes
903	MUNICPL		6675		SQ. FT.	SITE		0	21.	2.09	N13			H TRAF	-5					292,666						292,700	7.6

Total AC/HA: 0.15324 | Total SF/SM: 6675 | Parcel LUC: 903 | MUNICPL | Prime NB Desc: N13

Total: 292,666 | Spl Credit: | Total: 292,700

Database: AssessPro - Waltham amyc 2022

EXTERIOR INFORMATION

Type: 12 - TWO FAMILY	
Sty Ht: 2H - 2H	
(Liv) Units: 2	Total: 2
Foundation: 03 - BRK/STN	
Frame: 01 - WOOD	
Prime Wall: 05 - ASBESTOS	
Sec Wall:	%
Roof Struct: 02 - HIP	
Roof Cover: 01 - ASPHALT	
Color: GRAY	
View / Desir:	

GENERAL INFORMATION

Grade: C - AVERAGE	
Year Blt: 1920	Eff Yr Blt:
Alt LUC:	Alt %:
Jurisdict:	Fact:
Const Mod:	
Lump Sum Adj:	

INTERIOR INFORMATION

Avg Ht/FL: STD	
Prim Int Wal 02 - PLASTER	
Sec Int Wall:	%
Partition: T - TYPICAL	
Prim Floors: 04 - CARPET	
Sec Floors:	%
Bsmnt Flr: 12 - CONCRETE	
Subfloor:	
Bsmnt Gar:	
Electric: 03 - TYPICAL	
Insulation: 02 - TYPICAL	
Int vs Ext: S	
Heat Fuel: 01 - OIL	
Heat Type: 05 - STEAM	
# Heat Sys: 1	
% Heated: 100	% AC:
Solar HW: NO	Central Vac: NO
% Com Wal	% Sprinkled

BATH FEATURES

Full Bath	2	Rating:	Average
A Bath:		Rating:	
3/4 Bath:		Rating:	
A 3QBth		Rating:	
1/2 Bath:		Rating:	
A HBth:		Rating:	
OthrFix:		Rating:	

OTHER FEATURES

Kits:	2	Rating:	Good
A Kits:		Rating:	
Frpl:		Rating:	
WSFlue:		Rating:	

CONDO INFORMATION

Location:	
Total Units:	
Floor:	
% Own:	
Name:	

DEPRECIATION

Phys Cond:	AG - Avg-Good	26.	%
Functional:			%
Economic:			%
Special:			%
Override:			%
Total:		26.4	%

CALC SUMMARY

Basic $ / SQ:	190.00
Size Adj.:	0.93809527
Const Adj.:	0.97000003
Adj $ / SQ:	172.891
Other Features:	90000
Grade Factor:	1.00
NBHD Inf:	1.00000000
NBHD Mod:	
LUC Factor:	1.00
Adj Total:	530159
Depreciation:	139962
Depreciated Total:	390197

COMMENTS

5% TRAFFIC LOT # A 89 MAPLE STREET : 89 MAPLE STREET.

RESIDENTIAL GRID

1st Res Grid | Desc: Line 1 | # Units 2

Level	FY	LR	DR	D	K	FR	RR	BR	FB	HB	L	O
Other												
Upper												
Lvl 2												
Lvl 1												
Lower												

Totals | RMs: 10 | BRs: 4 | Baths: 2 | HB

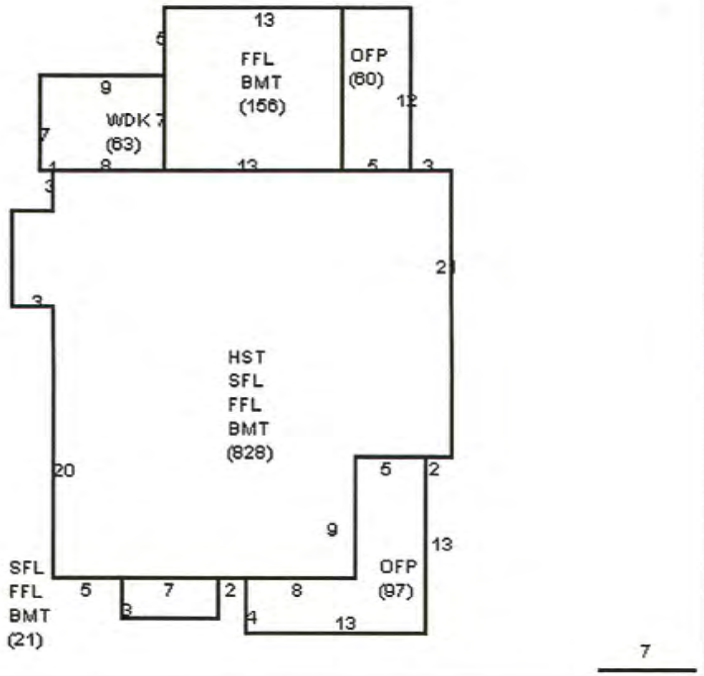
REMODELING

Exterior:	
Interior:	
Additions:	
Kitchen:	
Baths:	
Plumbing:	
Electric:	
Heating:	
General:	

RES BREAKDOWN

No Unit	RMS	BRS	FL
2	5	2	
Totals			
2	10	4	

SKETCH



COMPARABLE SALES

Rate	Parcel ID	Typ	Date	Sale Price

WtAv$/SQ: | AvRate: | Ind.Val

Juris. Factor: | Before Depr: 172.89
Special Features: 0 | Val/Su Net: 111.71
Final Total: 390200 | Val/Su SzAd 172.05

SUB AREA

Code	Description	Area - SQ	Rate - AV	Undepr Value
BMT	BASEMENT	1,005	43.220	43,439
FFL	FIRST FLOOR	1,005	172.890	173,755
SFL	SECOND FLOOR	849	172.890	146,784
HST	HALF STORY	414	172.890	71,577
OFP	OPEN PORCH	157	22.100	3,470
WDK	WOOD DECK	63	18.000	1,134

Net Sketched Area: 3,493 | Total: 440,159
Size Ad 2268 | Gross Area 3907 | FinArea 2268

SUB AREA DETAIL

Sub Area	% Usbl	Descrip	% Type	Qu	# Ten

MOBILE HOME

Make: | Model: | Serial # | Year: | Color:

SPEC FEATURES/YARD ITEMS

PARCEL ID R069 033 0009

Code	Description	A	Y/S	Qty	Size/Dim	Qual	Con	Year	Unit Price	D/S	Dep	LUC	Fact	NB Fa	Appr Value	JCod	JFact	Juris. Value

More: N | Total Yard Items: | Total Special Featues: | Total:

IMAGE

AssessPro Patriot Properties, Inc

APPENDIX D-
Environmental Report
Baldwin Cottage

efi global

BOSTON NORTH

November 12, 2021

Mr. Robert Waters
Housing Supervisor
City of Waltham
119 School Street
Waltham, Massachusetts 02452

VIA EMAIL: rwaters@city.waltham.ma.us

RE: Pre-Demolition Asbestos & Hazardous Building Materials Survey Report
Baldwin Cottage
338 Trapelo Road
Waltham, Massachusetts 02453
EFI Project No. 020.02028

Dear Robert:

EFI Global Inc. (EFI) is pleased to provide this survey report to the City of Waltham for a pre-demolition hazardous building materials survey of the Baldwin Cottage located at 338 Trapelo Road in Waltham, Massachusetts (Site). EFI performed the survey on November 3, 2021. The pre-demolition survey included an inspection of the building for suspect asbestos-containing materials, sampling of representative painted surfaces/coatings for lead, and an inventory of universal waste and other hazardous/regulated 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
Senior Project Manager

John Vaz
Senior Project Manager

PRE-DEMOLITION ASBESTOS & HAZARDOUS BUILDING MATERIALS SURVEY REPORT

BALDWIN COTTAGE
338 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02453

Prepared for:

The City of Waltham
Attn: Robert Waters
119 School Street
Waltham, Massachusetts 02452

Prepared by:

155 West Street, Suite 6
Wilmington, Massachusetts 01887

EFI Project Number 020.02028
November 12, 2021

TABLE OF CONTENTS

EXECUTIVE SUMMARY

EFI Global (EFI) performed a pre-demolition hazardous building materials survey of the Baldwin Cottage, located at 338 Trapelo Road in Waltham, Massachusetts (Site). The scope of work included a survey for asbestos-containing materials (ACM), testing for lead painted surfaces, and a visual inventory for regulated/potentially hazardous building materials that may require special handling and disposal prior to the start of planned demolition. The survey was performed on November 3, 2021 by USEPA-accredited and Massachusetts Department of Labor Standards (MassDLS) licensed asbestos inspectors, Mr. Richard Murphy (License No. AI-900522) and Mr. John Young (License No. AI-900986).

The structure is an approximately 2,100 square foot, two-story wood framed building with a basement. The survey included all accessible interior and exterior areas of the site building including readily accessible roofing areas (Project Area). Where feasible, EFI utilized destructive investigative methods to inspect wall cavities, beneath floor coverings, above ceilings, or otherwise inaccessible locations. Mechanical and electrical components were not disassembled to access interior components.

Based on the findings of the asbestos survey, the following ACMs were identified in Baldwin Cottage.

- White sink coating
- Pipe insulation

Asbestos was not detected in any of the other suspect materials sampled and analyzed by the laboratory. The identified asbestos-containing materials (ACMs) should be properly removed and disposed by a Massachusetts-licensed Asbestos Contractor prior to the start of planned demolition activities.

Lead paint chip sampling results indicate lead is present on various painted surfaces such as plaster walls, gypsum walls, wood trim, windows, doors, metal pipes and stone foundation ranging from <0.009% to 29.290% by weight. The highest percentage on lead by weight was detected on the white metal pipe. Contractors performing work on surfaces where lead is present must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead. This will require the use of work practices and engineering controls to minimize airborne exposure to lead as well as proper characterization of wastes prior to disposal.

A visual inventory for other potentially hazardous or regulated building materials was performed. Items including fluorescent lamps and associated ballasts, paint white goods, batteries, air conditioner, and smoke detectors were observed in accessible building areas.

INTRODUCTION

EFI Global (EFI) performed a pre-demolition hazardous building materials survey of the Baldwin Cottage, located at 338 Trapelo Road in Waltham, Massachusetts (Site). The scope of work included a survey for asbestos-containing materials (ACM), testing for lead painted surfaces, and a visual inventory for regulated/potentially hazardous building materials that may require special handling and disposal prior to the start of planned renovations. The survey was performed on November 3, 2021.

The survey included all accessible interior and exterior areas of the building. The building was vacant at the time of EFI's survey. Where feasible, destructive investigative methods were utilized to access wall cavities, areas above ceilings and beneath flooring finishes. Bulk samples of observed and accessible suspect ACMs and paint chips from representative painted surfaces were submitted for laboratory analysis to determine asbestos and lead content.

1.0 ASBESTOS CONTAINING MATERIALS SURVEY

1.1 Survey Methodology and Analytical Methods

The asbestos survey was performed in accordance with EPA, OSHA and MassDEP regulations by USEPA accredited and Massachusetts Department of Labor Standards (MassDLS) licensed asbestos inspectors Mr. Richard Murphy (License No.: AI-900522), and Mr. John Young (License No. AI-900986) of EFI. EFI's inspectors performed a visual inspection of accessible building areas and collected bulk samples of observed suspect ACMs. A total of 83 bulk samples of suspect ACMs were collected on-site and transported under chain of custody protocol to Asbestos Identification Laboratory (AIL) in Woburn, Massachusetts, a Massachusetts-licensed laboratory. AIL 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 findings of this report are based upon observations of observed suspect materials within the Project Area and the analysis of representative bulk samples collected. Samples were analyzed with a standard 3-day turnaround time using polarized light microscopy (PLM) in accordance with United States Environmental Protection Agency (USEPA) Method 600/R-93/116. 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 to one percent asbestos, it is considered to be an asbestos-containing material under Massachusetts Department of Environmental Protection (MassDEP) asbestos regulations.

Photographs depicting observed suspect ACMs sampled by EFI are presented in Attachment A. The asbestos laboratory report is presented in Attachment B. An inventory of the types, estimated quantities, condition and location of ACMs identified during the survey is presented in Table 1. EFI conducted a thorough inspection of accessible areas within the building. Limited destructive sampling methods/exploratory demolition utilizing hand tools was performed to evaluate the potential for hidden suspect materials that may be present inside wall cavities, above ceilings, and beneath floor coverings or in other concealed areas.

Building materials exist in the form of thermal systems insulation (TSI), surfacing materials, and miscellaneous materials. Bulk samples representing individual homogenous areas of suspect ACM, (materials that are determined to be uniform in color and texture and installed in the same construction period) were collected in a randomly distributed manner, in accordance with the EPA sampling protocol outlined in 40 CFR 763:

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.

- Collect at least three bulk samples from each homogeneous area that is less than or equal to 1,000 ft^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.
- Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft^2.

Thermal systems insulation

(e.g., pipe fitting insulation, tank insulation, etc.) 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.

- 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.
- 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.
- 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).

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.

1.2 Asbestos-Containing Materials Findings

The following suspect ACMs sampled by EFI at Baldwin Cottage were reported by AIL as containing greater than or equal to one percent (1%) asbestos:

- White Sink Coating
- Pipe Insulation
- Boiler Components (Assumed)

The following suspect ACMs sampled by EFI at Baldwin Cottage were reported by AIL as containing no detectable asbestos:

- Gypsum Board
- Joint compound
- White skim coat plaster
- Gray base coat plaster
- Gray plaster
- Textured ceiling
- 12" x 12" tan floor tile with gray streaks and associated yellow mastic
- 12" x 12" white floor tile with gray fleck and associated yellow mastic
- 12" x 12" brown floor tile with yellow fleck and associated yellow mastic
- Gray terracotta floor tile grout
- Gray terracotta floor tile thinset
- Black paper under hardwood floors
- Brown paper under hardwood floors
- Brown paper behind wood wall
- Gray skim coat on chimney
- Gray chimney flue cement
- White insulation inside wood door
- Brown paper inside metal door
- Blown-in insulation
- Wet wrap on pipe insulation
- Tan exterior window glazing
- Brown paper behind wood siding
- Black paper behind wood siding
- Roof shingle and associated black mastic
- Black paper under roof shingle

An inventory of the types, locations, condition and estimated quantities of ACMs identified during the survey is presented in Table 1. Copies of the asbestos laboratory analytical reports are presented in Attachment B.

1.3 Asbestos Survey Limitations

EFI's scope of work included accessible interior and exterior building areas using limited destructive evaluation techniques where feasible to access concealed areas. In addition, EFI was able to inspect the roof and subsurface foundation walls for potential damp-proofing using hand tools to an approximate 1' depth below grade in four (4) locations around the building perimeter.

Any hidden materials uncovered during demolition activities, and not identified within this report, must be assumed to contain asbestos until laboratory analysis proves otherwise. EFI's survey did not include an assessment for underground steam lines and underground transite water/sewer lines that may be present at the Site.

1.4 Recommendations

EFI recommends that all identified ACMs and associated asbestos-containing waste materials (ACWM) that will be impacted by the proposed demolition of the Baldwin Cottage be properly removed, packaged, and disposed by a Massachusetts-licensed Asbestos Abatement Contractor. The abatement must be completed in accordance with requirements of MassDLS asbestos regulations (454 CMR 28.00), 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), and applicable transportation regulations, local regulations and ordinances.

If suspect ACMs other than the above-referenced materials are identified during demolition activities, EFI recommends that they be assumed ACM until sampled and analyzed by a MassDLS licensed asbestos inspector using a Massachusetts-licensed asbestos analytical laboratory prior to disturbance. EFI is available to assist with abatement contractor oversight and air monitoring as required by applicable state and federal asbestos regulations.

2.0 LEAD TESTING

EFI performed a visual inspection and collected paint chip samples from representative painted/coated substrates from interior and exterior surfaces to determine lead content. Lead analysis was conducted by SanAir Technologies Laboratory (SanAir) of Powhatan, Virginia, with a standard 3-day turnaround time. SanAir analyzed the samples using atomic absorption spectrometry (AAS) in accordance with US EPA method SW846-7420.

2.1 Summary of Findings

A total of nine (9) paint chip samples were collected from various surfaces. The lead content of the samples ranged from <0.009% to 29.290% lead by weight. Refer to Table 3 for a list of surfaces sampled. The lead paint laboratory analytical report is presented in Attachment C. All Contractors performing work that disturbs any concentration of lead must comply with the OSHA Lead in Construction Standard, 29 CFR 1926.62, Lead.

2.2 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 elevated employee exposures. The level of exposure varies based upon the lead concentration, type of work performed, 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 ($\mu g/m^3$) and the OSHA permissible exposure limit (PEL) of 50 $\mu g/m^3$.

OSHA requires that contractors monitor employee exposures if coated surfaces with paint

containing lead are impacted during construction or renovation/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 abrasives 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 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.

2.3 Recommendations

It is recommended that construction and demolition personnel performing work at the residence comply with the OSHA Lead in Construction Standard requirements during all construction/demolition activities at the Site.

3.0 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 PCBs” labels. Light ballasts that do not have “No PCBs” labels should be assumed to contain PCBs and treated as PCB-containing and handled/disposed of accordingly. In addition, if light ballasts do not have “No PCBs” labels, the manufacturer can 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 tubes 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 EPA’s Resource Conservation and Recovery Act (RCRA). To minimize the potential of mercury contamination, EFI recommends that fluorescent light bulbs be disposed/recycled in accordance with applicable regulations.

3.1 Summary of Findings

EFI performed a visual inspection to estimate the number of fluorescent light bulbs (lamps) and ballasts located in the building that may be removed and replaced as part of the renovation project. EFI recommends recycling of the fluorescent light bulbs (lamps) in accordance with applicable federal and state regulations. A detailed inventory of fluorescent light bulbs (lamps) and ballasts is provided in Table 2.

4.0 OTHER HAZARDOUS MATERIALS

EFI performed a visual inspection and inventory of potentially hazardous/regulated items including stored chemicals, mechanical equipment or other items located within the building that may require special handling and disposal prior to building demolition activities. During the survey, EFI observed fluorescent lamps and associated ballasts, paint white goods, batteries, air conditioner, and smoke detectors within the Site building. An inventory of the observed building-related hazardous materials is presented in Table 2.

It is recommended that the observed Other Hazardous Materials in the building be properly removed, disposed or sent to a recycling facility by a qualified contractor.

Table 1

Inventory of Observed Asbestos-Containing Materials
Pre-Demolition Survey
Baldwin Cottage
338 Trapelo Road, Waltham, Massachusetts
November 3, 2021

Material Description	Material Location(s)	Condition	Estimated Quantity
White sink coating	1st floor art supply room	Good	1 Unit
Pipe insulation	Basement	Damaged	30 LF
Boiler Components (Assumed)	Basement Boiler Room	Good	1 Unit

SF – square feet
LF – linear feet

This summary table is not intended for use as a bidding document and is only presented as an appendix to EFI's Pre-Demolition Asbestos Survey Report.

TABLE 2

Universal Waste and Regulated/Hazardous Materials Inventory
Pre-Demolition Survey
Baldwin Cottage
338 Trapelo Road, Waltham, Massachusetts
November 3, 2021

Material	Location	Quantity
Window Air Conditioner	1st and 2nd Floor	3 Units
Smoke Detectors	Throughout	7 Units
Compact Lamps	Throughout	36 Lamps
Door Arms	1st Floor	2 Units
Emergency Light	1st Floor	2 Units
Fire Pull	1st Floor	2 Units
Fire Horn	1st Floor Hallway	1 Unit
Thermostat	1st Floor	1 Unit
Fuse Box	Basement Stairwell	1 Unit
Fuse Panel	Basement	1 Unit
Fire Alarm	Basement	1 Unit
Boiler	Basement	1 Unit
Electric Hot Water Heater	Basement	2 Units
Washing Machine	Basement Sink Room	1 Unit
Dryer	Basement Sink Room	1 Unit
4’ Light Bulbs	Basement	2 Units
Ballasts	Basement	2 Units
1” Round Bulb	Basement	1 Unit

TABLE 3

Summary of Paint Chip Analysis Results for Lead
Pre-Demolition Survey
Baldwin Cottage
338 Trapelo Road, Waltham, Massachusetts
November 3, 2021

Material Description	Material Location	Substrate	Result % by Weight
Red Paint	Interior Wall	Plaster	20.980%
Red Paint	Interior Door	Wood	2.910%
Red Paint	Exterior Door	Wood	1.431%
White Paint	Pipe	Metal	29.290%
White Paint	Interior Wall	Plaster	24.610%
White Paint	Interior Door Frame	Wood	0.027%
White Paint	Exterior Trim	Wood	25.060%
White Paint	Interior Wall	Brick	0.290%
White Paint	Exterior Foundation	Stone	<0.009%

ATTACHMENT A

PHOTOGRAPHS

Gypsum Board and Joint Compound

White Skim Coat Plaster and Gray Base Coat Plaster

Textured Ceiling

12” x 12” Tan Floor with Gray Streaks, Associated Yellow Mastic and Black Paper Under Wood Floors

12” x 12” White Floor Tile with Gray Fleck, 12” x 12” Brown Floor Tile with Yellow Fleck and Associated Yellow Mastic

Gray Terracotta Floor Tile Grout

Brown Paper Behind Wood Wall

ACM White Sink Coating

Gray Skim Coat on Chimney

Gray Chimney Flue Cement

White Insulation Inside Wood Door

Blown-in Insulation

ACM Pipe Insulation

Tan Exterior Window Glazing

ATTACHMENT B

ASBESTOS LABORATORY REPORT

Asbestos Identification Laboratory.

165 New Boston St., Ste 227
Woburn, MA 01801
781-932-9600

Web: www.asbestosidentificationlab.com Email: mikemanning@asbestosidentificationlab.com

NVLAP® Testing Lab Code: 200919-0

Batch: 71449

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

Dear Jack Young,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The Analysis Method is BULK PLM ANALYSIS, EPA/600/R-93/116The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.
Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Jack Young for your business.

Michael Manning
Owner/Director

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
01A / 790085	Gypsum Board	1st Floor Small Hall	gray	Cellulose 5 Non-Fibrous 95	None Detected
01B / 790086	Gypsum Board	2nd Floor Bathroom	gray	Cellulose 10 Non-Fibrous 90	None Detected
02A / 790087	Joint Compound	1st Floor Small Hall	white	Non-Fibrous 100	None Detected
02B / 790088	Joint Compound	1st Floor Small Hall	white	Non-Fibrous 100	None Detected
02C / 790089	Joint Compound	2nd Floor Bathroom	white	Non-Fibrous 100	None Detected
03A / 790090	White Skim Coat Plaster	2nd Floor Kitchen Wall	white	Non-Fibrous 100	None Detected
03B / 790091	White Skim Coat Plaster	2nd Floor Stairwell Wall	white	Non-Fibrous 100	None Detected
03C / 790092	White Skim Coat Plaster	1st Floor Right Playroom Wall	white	Non-Fibrous 100	None Detected
03D / 790093	White Skim Coat Plaster	1st Floor Art Supply Room Wall	white	Non-Fibrous 100	None Detected
03E / 790094	White Skim Coat Plaster	2nd Floor Left Room Ceiling	white	Non-Fibrous 100	None Detected
03F / 790095	White Skim Coat Plaster	2nd Floor Right Room Ceiling	white	Non-Fibrous 100	None Detected
03G / 790096	White Skim Coat Plaster	1st Floor Front Room Ceiling	white	Non-Fibrous 100	None Detected
04A / 790097	Gray Base Coat Plaster	2nd Floor Kitchen Wall	gray	Hair 3 Non-Fibrous 97	None Detected
04B / 790098	Gray Base Coat Plaster	2nd Floor Stairwell Wall	gray	Hair 3 Non-Fibrous 97	None Detected
04C / 790099	Gray Base Coat Plaster	1st Floor Right Playroom Wall	gray	Hair 5 Non-Fibrous 95	None Detected
04D / 790100	Gray Base Coat Plaster	1st Floor Art Supply Room Wall	gray	Hair 5 Non-Fibrous 95	None Detected

Sampled: November 03, 2021 **Received:** November 03, 2021 **Analyzed:** November 05, 2021

Monday 08 November 2021

Analyzed by: Michael Manning **Batch:** 71449

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
04E / 790101	Gray Base Coat Plaster	2nd Floor Left Room Ceiling	gray	Hair 3 Non-Fibrous 97	None Detected
04F / 790102	Gray Base Coat Plaster	2nd Floor Right Room CeilingCeiling	gray	Hair 3 Non-Fibrous 97	None Detected
04G / 790103	Gray Base Coat Plaster	1st Floor Right Front Room	gray	Hair 2 Non-Fibrous 98	None Detected
05A / 790104	Gray Palster	Basement Hallway Ceiling	gray	Non-Fibrous 100	None Detected
05B / 790105	Gray Plaster	Basement Sink Room Ceiling	gray	Non-Fibrous 100	None Detected
05C / 790106	Gray Plaster	Basement Boiler Room Ceiling	gray	Non-Fibrous 100	None Detected
06A / 790107	Textured Ceiling	1st Floor 3 Season Room	white	Non-Fibrous 100	None Detected
06B / 790108	Textured Ceiling	1st Floor 3 Season Room	white	Non-Fibrous 100	None Detected
06C / 790109	Textured Ceiling	1st Floor 3 Season Room	white	Non-Fibrous 100	None Detected
07A / 790110	Textured Ceiling	2nd Floor Kitchen	white	Non-Fibrous 100	None Detected
07B / 790111	Textured Ceiling	2nd Floor Right Room	white	Non-Fibrous 100	None Detected
07C / 790112	Textured Ceiling	2nd Floor Right Room	white	Non-Fibrous 100	None Detected
08A / 790113	12x12 Tan Floor Tile with Gray Streaks	2nd Floor Bathroom	tan	Non-Fibrous 100	None Detected
08B / 790114	12x12 Tan Floor Tile with Gray Streaks	2nd Floor Bathroom	tan	Non-Fibrous 100	None Detected
09A / 790115	Yellow Mastic Assoc. W/ 12x12 Tan Floor Tile with Gray Streaks	2nd Floor Bathroom	yellow	Non-Fibrous 100	None Detected
09B / 790116	Yellow Mastic Assoc. W/ 12x12 Tan Floor Tile with Gray Streaks	2nd Floor Bathroom	yellow	Non-Fibrous 100	None Detected

Sampled: November 03, 2021 **Received:** November 03, 2021 **Analyzed:** November 05, 2021

Monday 08 November 2021

Analyzed by: Michael Manning **Batch:** 71449

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
10A / 790117	12x12 White Floor Tile with Gray Flec	1st Floor Art Supply Room	white	Non-Fibrous 100	None Detected
10B / 790118	12x12 White Floor Tile with Gray Flec	1st Floor Art Supply Room	white	Non-Fibrous 100	None Detected
11A / 790119	Yellow Mastic Assoc. W/ 12x12 White Floor Tile with Gray Flec	1st Floor Art Supply Room	yellow	Non-Fibrous 100	None Detected
11B / 790120	Yellow Mastic Assoc. W/ 12x12 White Floor Tile with Gray Flec	1st Floor Art Supply Room	yellow	Non-Fibrous 100	None Detected
12A / 790121	12x12 Brown Floor Tile with Yellow Flec	1st Floor Smqall Hallway	tan	Non-Fibrous 100	None Detected
12B / 790122	12x12 Brown Floor Tile with Yellow Flec	1st Floor Art Room	tan	Non-Fibrous 100	None Detected
13A / 790123	Yellow Mastic Assoc. W/ 12x12 Brown Floor Tile with Yellow Flec	1st Floor Small Hallway	yellow	Non-Fibrous 100	None Detected
13B / 790124	Yellow Mastic Assoc. W/ 12x12 Brown Floor Tile with Yellow Flec	1st Floor art Room	yellow	Non-Fibrous 100	None Detected
14A / 790125	Gray Teracotta Floor Grout	1st Floor Main Entry	gray	Non-Fibrous 100	None Detected
14B / 790126	Gray Teracotta Floor Grout	1st Floor Main Entry	gray	Non-Fibrous 100	None Detected
15A / 790127	Gray Teracotta Floor Thinset	1st Floor Main Entry	gray	Non-Fibrous 100	None Detected
15B / 790128	Gray Teracotta Floor Thinset	1st Floor Main Entry	gray	Non-Fibrous 100	None Detected
16A / 790129	Black Paper under Hardwood Floor	1st Floor ARt Room	black	Cellulose 70 Non-Fibrous 30	None Detected
16B / 790130	Black Paper under Hardwood Floor	2nd Floor Kitchen	black	Cellulose 70 Non-Fibrous 30	None Detected
17A / 790131	Brown Paper Under Hardwood Floor	1st Floor 3 Season Room	brown	Cellulose 90 Non-Fibrous 10	None Detected
17B / 790132	Brown Paper under Hardwood Floor	1st Floor Front Right Room	brown	Cellulose 90 Non-Fibrous 10	None Detected

Sampled: November 03, 2021 **Received:** November 03, 2021 **Analyzed:** November 05, 2021

Monday 08 November 2021

Analyzed by: Michael Manning **Batch:** 71449

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
18A / 790133	Brown Paper behind Wood Wall	1st Floor 3 Season Room	brown	Cellulose 95 Non-Fibrous 5	None Detected
18B / 790134	Brown Paper behind Wood Wall	1st Floor 3 Season Room	brown	Cellulose 95 Non-Fibrous 5	None Detected
19A / 790135	White Sink Coating	1st Floor Art Supply Room	white	Non-Fibrous 95	**Detected** **Chrysotile 5**
19B / 790136	White Sink Coating	1st Floor Art Supply Room			Not Analyzed
20A / 790137	Gray Skim Coat on Chimney	Attic	gray	Cellulose 2 Non-Fibrous 98	None Detected
20B / 790138	Gray Skim Coat on Chimney	Attic	gray	Cellulose 3 Non-Fibrous 97	None Detected
20C / 790139	Gray Skim Coat on Chimney	Attic	gray	Cellulose 2 Non-Fibrous 98	None Detected
21A / 790140	Gray Chimney Flue Cement	Basement, Boiler Room	gray	Non-Fibrous 100	None Detected
21B / 790141	Gray Chimney Flue Cement	Basement, Boiler Room	gray	Non-Fibrous 100	None Detected
22A / 790142	White Door Insulation	1st Floor Hall	white	Cellulose 40 Non-Fibrous 60	None Detected
22B / 790143	White Door Insulation	1st Floor Hall	white	Cellulose 45 Non-Fibrous 55	None Detected
23A / 790144	Brown Paper inside Metal Door	Basement	brown	Cellulose 98 Non-Fibrous 2	None Detected
23B / 790145	Brown Paer inside Metal Door	Basement	brown	Cellulose 95 Non-Fibrous 5	None Detected
24A / 790146	Blown-In Insulation	2nd Floor Kitchen Ceiling	multi	Cellulose 90 Non-Fibrous 10	None Detected
24B / 790147	Blown-In Insualtion	2nd Foor Right Room	multi	Cellulose 90 Non-Fibrous 10	None Detected
24C / 790148	Blown-In Insulation	1st Flor 3 Season Room Ceiling	multi	Cellulose 95 Non-Fibrous 5	None Detected

Sampled: November 03, 2021 **Received:** November 03, 2021 **Analyzed:** November 05, 2021

Monday 08 November 2021

Analyzed by: Michael Manning **Batch:** 71449

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
24D / 790149	Blown-In Insulation	1st Floor Art Room	multi	Cellulose 95 Non-Fibrous 5	None Detected
24E / 790150	Blown-In Insulation	1st Floor Aret Supply Room	multi	Cellulose 90 Non-Fibrous 10	None Detected
25A / 790151	Wet Wrap on Pipe Insualtion	Basement	white	Fiberglass 90 Non-Fibrous 10	None Detected
25B / 790152	Wet Wrap on Pipe Insulation	Basement	white	Fiberglass 90 Non-Fibrous 10	None Detected
26A / 790153	Pipe Insulation	Basement Hall	white	Non-Fibrous 60	**Detected** **Chrysotile 40**
26B / 790154	Pipe Insulation	Basement Hall			Not Analyzed
26C / 790155	Pipe Insulation	Basement Boiler			Not Analyzed
27A / 790156	Tan Exterior Window Glazing	Exterior 3 Seasons Room	gray	Non-Fibrous 100	None Detected
27B / 790157	Tan Exterior Window Glazing	Exterior Entry	gray	Non-Fibrous 100	None Detected
28A / 790158	Brown Paper behind Wood Siding	Exterior Front	brown	Cellulose 85 Non-Fibrous 15	None Detected
28B / 790159	Brown Paper behind Wood Siding	Exterior Right	brown	Cellulose 90 Non-Fibrous 10	None Detected
29A / 790160	Black Paper behind Wood Siding	Exterior Rear	black	Cellulose 70 Non-Fibrous 30	None Detected
29B / 790161	Black Paper behind Wood Siding	Exterior Rear	black	Cellulose 70 Non-Fibrous 30	None Detected
30A / 790162	Roof Shingle	Exterior Roof	black	Cellulose 40 Non-Fibrous 60	None Detected
30B / 790163	Roof Shingle	Exterior Roof	black	Cellulose 45 Non-Fibrous 55	None Detected
31A / 790164	Black Mastic Assoc. with Roof Shingle	Exterior Roof	black	Non-Fibrous 100	None Detected

Sampled: November 03, 2021 **Received:** November 03, 2021 **Analyzed:** November 05, 2021

Monday 08 November 2021

Analyzed by: Michael Manning **Batch:** 71449

Jack Young
EFI Global, Inc
155 West Street
Suite 6
Wilmington, MA 01887

Project Information
020.02028
Baldwin Cottage,
Trapelo Rd.,
Waltham,
MA

Method: BULK PLM ANALYSIS, EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
31B / 790165	Balck Mastic Assoc. with Roof Shingle	Exterior Roof	black	Non-Fibrous 100	None Detected
32A / 790166	Black Paper under Roof Shingle	Exterior Roof	black	Cellulose 75 Non-Fibrous 25	None Detected
32B / 790167	Black Paper under Roof Shingle	Exterior Roof	black	Cellulose 75 Non-Fibrous 25	None Detected

Sampled: November 03, 2021 **Received:** November 03, 2021 **Analyzed:** November 05, 2021

Monday 08 November 2021

Analyzed by: Michael Manning **Batch:** 71449

Client: Eff Global

Address:

Project Site & #: Baldwin cottage, I

Phone / email address:

Contact:

Relinquish by/date:

Received by/date: 11/3/21

# of Samples Received: 83

CHAIN OF CUSTODY

EPA/600/R-93/116

Asbestos Identification Lab

165 New Boston St.

Suite 227

Woburn, MA 01801

(781)932-9600

www.asbestosidentificationlab.com

Date Sampled:

BATCH# 71449 Rev 06/16

Turnaround Time

- [ ] Less 3 Hrs
- [ ] Same Day
- [ ] Next Day
- [x] ~~Two Day~~ 3 day
- [ ] Point Count

Sample Method

- [x] Bulk
- [ ] Soil
- [ ] Wipe

Stop on 1st Positive? Yes/No

Notify Method: Mail/E-Mail/Verbal

Analyzed By: Michael Thomas

Date: 11/5/2021

Temp in Celsius = 22

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
71485	01A	Material						Chrysotile											R				
								Amosite															
								Crocidolite															
		Location	0	GY	N	on	FY	Tremolite											S				95
								Anthophyllite															
								Actinolite															
SG	01B	Material						Chrysotile											R				
								Amosite															
								Crocidolite															
		Location	0	GY	N	on	FY	Tremolite											10				90
								Anthophyllite															
								Actinolite															
87	02A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	on	Y	Tremolite															100
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
88	0213	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															100
								Anthophyllite															
								Actinolite															
89	02C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															100
								Anthophyllite															
								Actinolite															
90	031	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															100
								Anthophyllite															
								Actinolite															
91	033	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															100
								Anthophyllite															
								Actinolite															
92	03C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															100
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
93	03D	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															
								Anthophyllite															
								Actinolite															100
94	03E	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															
								Anthophyllite															
								Actinolite															100
95	03F	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															
								Anthophyllite															
								Actinolite															100
96	03G	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	w	N	any		Tremolite															
								Anthophyllite															
								Actinolite															100
97	04A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	gy	N	aw/fr		Tremolite															
								Anthophyllite															
								Actinolite															97

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
98	04/13	Material						Chrysotile															
								Amosite															
								Crocidolite												C			
		Location	0	GY	N	CW/FY		Tremolite															
								Anthophyllite												3			97
								Actinolite															
99	04C	Material						Chrysotile															
								Amosite															
								Crocidolite												C			
		Location	0	GY	N	CW/FY		Tremolite															
								Anthophyllite												5			95
								Actinolite															
00	04D	Material						Chrysotile															
								Amosite															
								Crocidolite												C			
		Location	0	GY	N	CW/FY		Tremolite															
								Anthophyllite												5			95
								Actinolite															
01	04E	Material						Chrysotile															
								Amosite															
								Crocidolite												C			
		Location	0	GY	N	CW/FY		Tremolite															
								Anthophyllite												3			97
								Actinolite															
02	04F	Material						Chrysotile															
								Amosite															
								Crocidolite												C			
		Location	0	GY	N	CW/FY		Tremolite															
								Anthophyllite												3			97
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
03	04a	Material						Chrysotile															
								Amosite															
								Crocidolite												C			
		Location	0	GY	N	GN/FY		Tremolite															
								Anthophyllite												2			98
								Actinolite															
04	05A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	GY	N	GN	Y	Tremolite															
								Anthophyllite															
								Actinolite															100
05	05B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	GY	N	GN	Y	Tremolite															
								Anthophyllite															100
								Actinolite															
06	05C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	GY	N	GN	Y	Tremolite															
								Anthophyllite															
								Actinolite															100
07	06A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	W	GN	Y	Tremolite															
								Anthophyllite															
								Actinolite															100

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
08	06B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	an	Y	Tremolite															
								Anthophyllite															100
								Actinolite															
09	06C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	any		Tremolite															
								Anthophyllite															100
								Actinolite															
10	07A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	any		Tremolite															
								Anthophyllite															100
								Actinolite															
11	07B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	any		Tremolite															
								Anthophyllite															100
								Actinolite															
12	07C	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	an	Y	Tremolite															
								Anthophyllite															100
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
13	08A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	T	N	a/w	N	Tremolite															
								Anthophyllite															
								Actinolite															100
14	08B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	T	N	a/w	N	Tremolite															
								Anthophyllite															
								Actinolite															100
15	09A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	Y	N	a/w	N	Tremolite															
								Anthophyllite															
								Actinolite															100
16	09B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	Y	N	a/w	N	Tremolite															
								Anthophyllite															
								Actinolite															100
17	10A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	a/w	N	Tremolite															
								Anthophyllite															
								Actinolite															100

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
18	10B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	W	N	an	N	Tremolite															
								Anthophyllite															
								Actinolite															100
19	11A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	Y	N	an	N	Tremolite															
								Anthophyllite															
								Actinolite															100
20	11B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	Y	N	an	N	Tremolite															
								Anthophyllite															
								Actinolite															100
21	12A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	T	N	an	N	Tremolite															
								Anthophyllite															
								Actinolite															100
22	12B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	T	N	an	N	Tremolite															
								Anthophyllite															
								Actinolite															100

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
23	13A	Material	0	Y	N	av	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															100
24	13B	Material	0	Y	N	av	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															100
25	14A	Material	0	6Y	N	av	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															100
26	14B	Material	0	6Y	N	av	N	Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															100
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
27	15A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	6Y	N	Gran	N	Tremolite															
								Anthophyllite															
								Actinolite															100
28	15B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	6Y	N	Gran	N	Tremolite															
								Anthophyllite															
								Actinolite															100
29	16A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	3C	N	GN / FN		Tremolite															
								Anthophyllite															
								Actinolite															30
30	16B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	3C	N	GN / FN		Tremolite															
								Anthophyllite															
								Actinolite															30
31	17A	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	3C	N	F	Y	Tremolite															
								Anthophyllite															
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
32	17B	Material						Chrysotile											R				
								Amosite															
								Crocidolite															
		Location	0	BRN		FY		Tremolite											90				10
								Anthophyllite															
								Actinolite															
33	18A	Material						Chrysotile											R				
								Amosite															
								Crocidolite															
		Location	0	BRN		FY		Tremolite											95				5
								Anthophyllite															
								Actinolite															
34	18B	Material						Chrysotile											R				
								Amosite															
								Crocidolite															
		Location	0	BRN		FY		Tremolite											95				5
								Anthophyllite															
								Actinolite															
35	19A	Material						Chrysotile	5	W	VF	+	2	N	1556	1549							
								Amosite															
								Crocidolite															
		Location	0	WW		aw		Tremolite															95
								Anthophyllite															
								Actinolite															
36	19B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															

DNA

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope					Asbestos Minerals	Optical Properties						RI		Non-Asbestos Percentage (%)						
			% of Asbestos	Color	Homogeneity	Texture	Friable		Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	∥	⊥	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
37	20A	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	GY	N	aw	W	Tremolite															
								Anthophyllite											2				98
								Actinolite															
38	20B	Material						Chrysotile															
								Amosite											R				
		Location	0	GY	N	aw	W	Crocidolite															
								Tremolite															
								Anthophyllite											3				97
								Actinolite															
39	20C	Material						Chrysotile															
								Amosite											R				
		Location	0	GY	N	aw	W	Crocidolite															
								Tremolite															
								Anthophyllite											2				98
								Actinolite															
40	21A	Material						Chrysotile															
								Amosite															
		Location	0	GY	N	aw	W	Crocidolite															
								Tremolite															
								Anthophyllite															100
								Actinolite															
41	21B	Material						Chrysotile															
								Amosite															
		Location	0	GY	N	aw	W	Crocidolite															
								Tremolite															
								Anthophyllite															100
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
42	22A	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	W	W	CN/F	Y	Tremolite															
								Anthophyllite											40				60
								Actinolite															
43	22B	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	W	W	CN/F	Y	Tremolite															
								Anthophyllite											45				55
								Actinolite															
44	23A	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	BR	N	F	Y	Tremolite															
								Anthophyllite											98				2
								Actinolite															
45	23B	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	BR	N	F	Y	Tremolite															
								Anthophyllite											95				5
								Actinolite															
46	24A	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	MC	N	F	Y	Tremolite															
								Anthophyllite											90				10
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
47	24B	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	M	L	N	F	Tremolite															
							Y	Anthophyllite											90				10
								Actinolite															
48	24C	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	M	L	N	F	Tremolite															
							Y	Anthophyllite											95				5
								Actinolite															
49	24D	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	M	L	N	F	Tremolite															
							Y	Anthophyllite											95				5
								Actinolite															
50	24E	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	M	L	N	F	Tremolite															
							Y	Anthophyllite											90				10
								Actinolite															
51	25A	Material						Chrysotile															
								Amosite										I					
								Crocidolite															
		Location	0	W	N	F	Y	Tremolite										90					
								Anthophyllite															10
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ___ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous	
57	25B	Material						Chrysotile									F							
		Location	0	W	W	FY		Amosite																
								Crocidolite																
								Tremolite									90						10	
								Anthophyllite																
								Actinolite																
58	26B	Material						Chrysotile	40	W	P	+	C	N	1556	1549								
		Location	40	W	W	CW/FY		Amosite																
								Crocidolite																
								Tremolite															60	
								Anthophyllite																
								Actinolite																
59	26B	Material						Chrysotile																
		Location						Amosite																
								Crocidolite																
								Tremolite																D.N.A
								Anthophyllite																
								Actinolite																
57	26C	Material						Chrysotile																
		Location						Amosite																
								Crocidolite																
								Tremolite																D.N.A
								Anthophyllite																
								Actinolite																
56	27A	Material						Chrysotile																
		Location	0	6Y	N	any		Amosite																
								Crocidolite																
								Tremolite															100	
								Anthophyllite																
								Actinolite																

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
57	37B	Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location	0	GY	W	aw	Y	Tremolite															100
								Anthophyllite															
								Actinolite															
58	38A	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	BR	W	F	Y	Tremolite															15
								Anthophyllite											85				
								Actinolite															
59	38B	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	BR	W	F	Y	Tremolite															10
								Anthophyllite											90				
								Actinolite															
60	39A	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	BK	W	aw / F	W	Tremolite															30
								Anthophyllite											70				
								Actinolite															
61	39B	Material						Chrysotile															
								Amosite															
								Crocidolite											R				
		Location	0	BK	W	aw / F	W	Tremolite															30
								Anthophyllite											70				
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ / Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: =	RI: ⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
62	30A	Material						Chrysotile											R				
		Location	0	B/K	N	CW/FW	N	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite											40				60
								Actinolite															
63	30B	Material						Chrysotile											R				
		Location	0	B/K	N	CW/FW	N	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite											45				55
								Actinolite															
64	31A	Material						Chrysotile															
		Location	0	B/K	N	CW	W	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															100
								Actinolite															
65	31B	Material						Chrysotile															
		Location	0	B/K	N	CW	W	Amosite															
								Crocidolite															
								Tremolite															
								Anthophyllite															100
								Actinolite															
66	32A	Material						Chrysotile															
		Location	0	B/K	N	CW/FW	N	Amosite											R				
								Crocidolite															
								Tremolite															
								Anthophyllite											75				25
								Actinolite															

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celcius = ____ Material / Location	Stereo Scope: % of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Optical Properties: Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI: ∥	⊥	Non-Asbestos Percentage (%): Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
790167	37B	Material						Chrysotile											R				
								Amosite															
								Crocidolite															
		Location	0	Blk	N	GN/F	N	Tremolite											75				25
								Anthophyllite															
								Actinolite															
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															
		Material						Chrysotile															
								Amosite															
								Crocidolite															
		Location						Tremolite															
								Anthophyllite															
								Actinolite															

efi global

BOSTON NORTH

BULK SAMPLE CHAIN OF CUSTODY FORM

Report to (Your Name):	Jack Young	**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:	020.02028 Baldwin Cottage, Trapelo Rd, Waltham, MA		
Email Report to:	Jack.Young@efiglobal.com Jennifer.Bettano@efiglobal.com rich.murphy@efiglobal.com		
Alternate (Your Email):			
Requested Turnaround Time:			
☐ 3hour	☐ 6 hour	☐ 1 day (24hr)	☐ 2 day (48hr)	☑ 3 day (72 hr)
Media and Methodology			
Type of Analysis:	Asbestos PLM	**Check for Positive Stop:**	☑
Notes:	Please analyze all plaster and joint compound samples.		

Sample ID	Type of Material	Location
01A	Gypsum Board	1st Floor small Hall
01B	↓	2nd Floor Bathroom
02A	Joint Compound	1st Floor small Hall
02B	↓	↓
02C	↓	2nd Floor Bathroom
03A	White skim coat plaster	2nd Floor kitchen wall
03B	↓	2nd Floor stairwell wall
03C	↓	1st Floor right play room wall
03D	↓	1st Floor art supply room wall
03E	↓	2nd Floor left room ceiling
03F	↓	2nd Floor right room ceiling
03G	↓	1st Floor right front room ceiling

Total Number of Samples Submitted: 83 Date Collected: 11/3/2021

Samplers Name: Jack Young Samplers Signature: [signature]

Relinquished By (EFI): Jack Young Date: 11/3/2021 Time: _____

Received By (Lab): [signature] 11/3/21 Date: _____ Time: _____

efi global

Sample ID	Type of Material	Location
04A	Gray Base coat Plaster	2nd Floor kitchen wall
04B	↓	2nd Floor stairwell wall
04C	↓	1st Floor right play room wall
04D	↓	1st Floor art supply room wall
04E	↓	2nd Floor left room ceiling
04F	↓	2nd Floor right room ceiling
04G	↓	1st Floor right front room ceiling
05A	Gray Plaster	Basement Hallway ceiling
05B	↓	Basement sink room ceiling
05C	↓	Basement boiler room ceiling
06A	Textured ceiling	1st Floor 3 season Room
06B	↓	↓
06C	↓	↓
07A	Textured ceiling	2nd Floor kitchen
07B	↓	2nd Floor right room
07C	↓	↓
08A	12x12 Tan floor tile with gray streaks	2nd Floor Bathroom
08B	↓	↓
09A	Yellow mastic assoc. w/ 12x12 Tan floor tile with gray streaks	↓
09B	↓	↓
10A	12 x12 white floor tile with gray flec	1st Floor Art Supply Room
10B	↓	↓
11A	Yellow mastic assoc. w/ 12x12 white floor tile with gray flec	↓
11B	↓	↓
12A	12x12 Brown floor tile with yellow flec	1st Floor small Hallway
12B	↓	1st Floor Art Room
13A	Yellow mastic assoc. w/ 12x12 Brown floor tile with yellow flec	1st Floor small hallway
13B	↓	1st Floor Art Room
14A	Gray Terracotta Floor Grout	1st Floor Main Entry
14B	↓	↓

efi global

Sample ID	Type of Material	Location
15A	Gray Terracotta Floor Thinset	1st Floor main Entry
15B	↓	↓
16A	Black paper under hard wood floor	1st Floor Art Room
16B	↓	2nd Floor kitchen
17A	Brown Paper under hard wood floor	1st Floor 3 seasons Room
17B	↓	1st Floor Front Right Room
18A	Brown Paper behind wood wall	1st Floor 3 seasons room
18B	↓	↓
19A	White sink coating	1st Floor Art supply Room
19B	↓	↓
20A	Gray skim coat on chimney	Attic
20B	↓	↓
20C	↓	↓
21A	Gray chimney flu cement	Basement Boiler Room
21B	↓	↓
22A	White Door insulation	1st Floor Hall
22B	↓	↓
23A	Brown paper inside metal Door	Basement
23B	↓	↓
24A	Blown-in insulation	2nd Floor kitchen ceiling
24B	↓	2nd Floor right room
24C	↓	1st Floor 3 seasons room ceiling
24D	↓	1st Floor Art Room
24E	↓	1st Floor Art supply room
25A	Wet wrap on pipe insulation	Basement
25B	↓	↓
26A	pipe insulation	Basement Hall
26B	↓	Basement Hall
26C	↓	Basement Boiler
27A	Tan exterior window glazing	Exterior 3 seasons room

efi global

Sample ID	Type of Material	Location
27B	Tan exterior window glazing	Exterior entry
28A	Brown paper behind wood siding	Exterior Front
28B	↓	Exterior Right
29A	Black paper behind wood siding	Exterior Rear
29B	↓	↓
30A	Roof shingle	Exterior Roof
30B	↓	↓
31A	Black mastic assoc. with roof shingle	↓
31B	↓	↓
32A	Black paper under roof shingle	Exterior Roof
32B	↓	↓

ATTACHMENT C

LEAD PAINT LABORATORY REPORT

Mike Manning
Asbestos Identification Lab
165 New Boston Street, Ste 227
Woburn, MA 01801
781-932-9600
www.AsbestosIdentificationLab.com

Dear Jack Young,

Enclosed please find 9 samples tested for **Lead** from project: **Baldwin Cottage, Trapelo Rd., Waltham, MA.** Asbestos Identification Laboratory subcontracted the samples to be analyzed by a NVLAP accredited laboratory.

Thank you

Michael Manning

Asbestos Identification Laboratory

November 8, 2021

SanAir Technologies Laboratory

The Identification Specialists

Analysis Report prepared for Asbestos Identification Laboratory

Report Date: 11/8/2021

Project Name: Baldwin Cottage Trapelo Rd Waltham, MA

SanAir ID#: 21069848

10501 Trade Court | North Chesterfield, Virginia 23236
888.895.1177 | 804.897.1177 | fax: 804.897.0070 | IAQ@SanAir.com | SanAir.com

SanAir
Technologies Laboratory

SanAir ID Number
21069848
FINAL REPORT
11/8/2021 8:55:46 AM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

Project Number:
P.O. Number:
Project Name: Baldwin Cottage Trapelo Rd Waltham, MA
Collected Date: Not Provided on COC
Received Date: 11/4/2021 10:10:00 AM

Dear Michael Manning,

We at SanAir would like to thank you for the work you recently submitted. The 9 sample(s) were received on Thursday, November 04, 2021 via UPS. The final report(s) is enclosed for the following sample(s): Pb-01, Pb-02, Pb-03, Pb-04, Pb-05, Pb-06, Pb-07, Pb-08, Pb-09.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:
- Cover Letter
- Analysis on Test Family AA
- Disclaimers and Additional Information

Sample conditions:
- 9 samples in Good condition.

SanAir
Technologies Laboratory

SanAir ID Number
21069848
FINAL REPORT
11/8/2021 8:55:46 AM

Name: Asbestos Identification Laboratory
Address: 165U New Boston St
Suite 227
Woburn, MA 01801
Phone: 781-932-9600

Project Number:
P.O. Number:
Project Name: Baldwin Cottage Trapelo Rd Waltham, MA
Collected Date: Not Provided on COC
Received Date: 11/4/2021 10:10:00 AM

Analyst: Baird, Marti
Test Method: SW846/M3050B/7000B

Lead Paint Analysis

PAINT Sample	Description	Ug Pb In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
21069848 - 1	Pb-01	26160	0.1247	80.2	209800	20.980 %
	Red Paint On Plaster Wall				µg/g (ppm)	By Weight
21069848 - 2	Pb-02	3341	0.1148	87.1	29100	2.910 %
	Red Paint On Wood Door				µg/g (ppm)	By Weight
21069848 - 3	Pb-03	1524	0.1065	93.9	14310	1.431 %
	Red Paint On Exterior Wood Door				µg/g (ppm)	By Weight
21069848 - 4	Pb-04	37250	0.1272	78.6	292900	29.290 %
	White Paint On Metal Pipe				µg/g (ppm)	By Weight
21069848 - 5	Pb-05	26260	0.1067	93.7	246100	24.610 %
	White Paint On Plaster Wall				µg/g (ppm)	By Weight
21069848 - 6	Pb-06	29	0.1048	95.4	274	0.027 %
	White Paint On Wood Door Frame				µg/g (ppm)	By Weight
21069848 - 7	Pb-07	26810	0.107	93.5	250600	25.060 %
	White Paint On Exterior Wood Trim				µg/g (ppm)	By Weight
21069848 - 8	Pb-08	301	0.1041	96.1	2896	0.290 %
	White Paint On Brick				µg/g (ppm)	By Weight
21069848 - 9	Pb-09	< 10	0.1074	93.1	<93.1	<0.009 %
	White Paint On Stone Foundation				µg/g (ppm)	By Weight

Method Reporting Limit <10 µg/0.1 g paint
Sample Pb-03 matrix spike failed due to matrix interference.

Signature: Marti Baird
Date: 11/5/2021

Reviewed: Alissa Galarneau
Date: 11/5/2021

Disclaimer

SanAir Technologies Laboratory, Inc. participates in the Environmental Lead Accreditation Program (ELAP) administered by AIHA-LAP, LLC (Lab ID162952). Refer to our accreditation certificate or www.aihaaccreditedlabs.org for an up to date list of the Fields of Testing for which we are accredited. SanAir also participates in the State of New York's DOH-ELAP (Lab Id 11983), and has met the EPA's NLLAP program standards. This report does not constitute endorsement by AIHA-LAP, LLC and/or any other U.S. governmental agencies; and may not be accredited by every local, state or federal regulatory agency.

This report is the sole property of the client named on the SanAir Technologies Laboratory chain-of-custody (COC). Neither results nor reports will be discussed with or released to any third party without our client's written permission. Final reports cannot be reproduced, except in full, without written authorization from SanAir Technologies Laboratory, Inc. The information provided in this report applies only to the samples submitted and is relevant only for the date, time, and location of sampling. SanAir is not responsible for sample collection or interpretation made by others. SanAir assumes no responsibility for information provided by the client on the COC such as project number, project name, collection dates, po number, special instructions, samples collected by; sample numbers, sample identifications, sample type, selected analysis type, flow rate, total volume or area, and start stop times that may affect the validity of the results in this report. SanAir Technologies Laboratory, Inc only assures the precision and accuracy of the data it generates and assumes no responsibility for errors or biasing that occur during collection prior to SanAir's receipt of the sample(s). SanAir's Method Detection Limits (MDL) and Reporting Limits (RL) have been derived using various materials meeting each accrediting agencies' standards. All quality control results are acceptable unless otherwise noted. Results are not corrected for blanks. For Lead Exposure Limits in Paint, refer to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards and State and Federal Regulations, where applicable.

SanAir Technologies Laboratory
1551 Oakbridge Dr STE B
Powhatan, VA 23139
804.897.1177 / 888.895.1177
Fax 804.897.0070
sanair.com

Metals & Lead Chain of Custody

Form 70, Revision 10. 05/18/18

SanAir ID Number: 21069848

Company: ASBESTOS ID LAB	Project #:	Phone #: 781-932-9600
Address: 165 NEW BOSTON ST. SUIT	Project Name: Baldwin Cottage Maple Rd. Walthem, MA	Phone #: 781-932-9600
City, St., Zip: WOBURN, MA 01801	Date Collected:	Fax #: 781-932-9606
Samples Collected By:	P.O. Number:	Email
Account #:	U.S. State Collected in:	Email:

Matrix Types

- [ ] Air (ug/m³)
- [ ] Wipe (ug/ft²)
- [ ] Paint [ ] Soil [ ] Bulk (ug/g or ppm)
- [ ] Other:

Metals Analysis Types

- [x] Total Concentration of Lead
- [ ] Total Concentration of RCRA 8 Metals
- [ ] TCLP for Lead
- [ ] TCLP for RCRA 8 Metals
- [ ] ICP-total concentration of metals (please list metals):

Turn Around Time

- [ ] Same Day
- [ ] 1 Day
- [x] 2 days
- [ ] 3 Days
- [ ] 4 Days
- [ ] Standard (5 day)
- [ ] Other Test:

Sample #	Collection Date & Time	Sample Identification/Location	Flow Rate	Start Time	Stop Time	Volume (L) Area (Sq ft)

See Attached

Special Instructions

Relinquished by	Date	Time	Received by	Date	Time
[signature]	11/3/21		SAH	11/4/21	10:10am

If no technician is provided, then the primary contact for your account will be selected. Unless scheduled, the turnaround time for all samples received after 3 pm EST will be logged in the next business day. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3hr TAT or a minimum charge of $150. A courier charge will be applied for same day and one-day turnaround times for offsite work. SanAir covers Standard Overnight FedEx shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.

Page ___ of ___

21069848

Sample ID	Type of Material	Location
Pb-01	Red Paint	on plaster wall
Pb-02	Red Paint	on wood Door
Pb-03	Red Paint	on exterior wood Door
Pb-04	White paint	on metal pipe
Pb-05	White paint	on plaster wall
Pb-06	White Paint	on wood door frame
Pb-07	White paint	on exterior wood trim
Pb-08	White paint	on brick
Pb-09	White paint	on Stone foundation

SAH
11/4/21
10:10am

R036	008	0001		1 of 2	RESIDENTIAL
Map	Block	Lot	Unit	CARD	**City of Waltham**

	Total Card /	Total Parcel
APPRAISED:	12,240,000/	12,668,500
USE VALUE:	12,240,000/	12,668,500
ASSESSED:	12,240,000/	12,668,500

PROPERTY LOCATION

No	Alt No	Direction/Street/City
282	-338	TRAPELO RD, WALTHAM

OWNERSHIP

Unit #:

Owner 1:	CITY OF WALTHAM
Owner 2:	
Owner 3:	
Street 1:	610 MAIN ST
Street 2:	
Twn/City:	WALTHAM
St/Prov:	MA
Cntry:	
Own Occ:	
Postal:	02452-5552
Type:	

PREVIOUS OWNER

Owner 1:	COMMONWEALTH OF MASS. -
Owner 2:	-
Street 1:	200 TRAPELO RD.
Twn/City:	WALTHAM
St/Prov:	MA
Cntry:	
Postal:	02452

NARRATIVE DESCRIPTION

This parcel contains 1,394,356 SQ. FT. of land mainly classified as MUNICPL with a COLONIAL Building built about 1890, having primarily WOOD SHING Exterior and 1720 Square Feet, with 1 Unit, 2 Baths, 0 3/4 Bath, 0 HalfBath, 0 Rooms, and 0 Bdrm.

OTHER ASSESSMENTS

Code	Descrip/No	Amount	Com. Int

PROPERTY FACTORS

Item	Code	Description	%	Item	Code	Description
Z				water		
o				Sewer		
n				Electri		
Census:				Exmpt		
Flood Haz:						
D	0	test		Topo		
s				Street	41	41
t				Gas:		

IN PROCESS APPRAISAL SUMMARY

Use Code	Land Size	Building Value	Yard Items	Land Value	Total Value
903	1394356.000	275,300		11,964,700	12,240,000
Total Card	32.010	275,300		11,964,700	12,240,000
Total Parcel	32.010	698,100	5,700	11,964,700	12,668,500

Source: Market Adj Cost | Total Value per SQ unit /Card: 7,116.28 | /Parcel: 2,497.

Legal Description

Entered Lot Size	
Total Land:	
Land Unit Type:	

User Acct	113077
GIS Ref	
GIS Ref	
Insp Date	04/22/05

!113077!

PREVIOUS ASSESSMENT

Parcel ID: R036 008 0001

Tax Yr	Use	Cat	Bldg Value	Yrd Items	Land Size	Land Value	Total Value	Asses'd Value	Notes	Date
2022	903	FV	698,100	5700	1,394,356.	11,964,700	12,668,500		Year End Roll	11/29/2021
2022	903	NC	698,100	5700	1,394,356.	11,964,700	12,668,500		Year End Roll	10/29/2021
2021	903	FV	663,600	5700	1,394,356.	11,964,700	12,634,000		Year End Roll	1/7/2021
2021	903	PTCH	611,300	6200	1,394,356.	10,825,100	11,442,600	11,442,600	patch	6/23/2020
2020	903	FV	611,300	6200	1,394,356.	10,825,100	11,442,600	11,442,600	Year End Roll	1/8/2020
2020	903	EX	611,300	6200	1,394,356.	10,825,100	11,442,600	11,442,600	Year End Roll	11/20/2019
2020	903	NC	611,300	6200	1,394,356.	10,825,100	11,442,600	11,442,600	Year End Roll	11/8/2019
2019	903	FV	506,500	6200	1,394,356.	10,614,300	11,127,000	11,127,000	Year End Roll	1/4/2019

SALES INFORMATION

TAX DISTRICT:

PAT ACCT.: 113077

Grantor	Legal Ref	Type	Date	Sale Code	Sale Price	V	Tst	Verif	Notes
COMMONWEALTH OF	64707-427		12/23/2014	INVOLVED GVT	3,700,000	No	No		release deed
COMMONWEALTH OF	5463-286		5/22/1930			Yes	No		

PRINT

Date	Time
12/10/21	11:25:29

LAST REV

Date	Time
08/10/16	13:21:27
apro	

USER DEFINED

Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
ASR Map:	
Fact Dist:	
Reval Dist:	
Year:	
LandReason:	
BldReason:	
CivilDistrict:	
Ratio:	

BUILDING PERMITS

Date	Number	Descrip	Amount	C/O	Last Visit	Fed Code	F. Descrip	Comment

ACTIVITY INFORMATION

Date	Result	By	Name
4/22/2005	INFO AT DOOR	345	JAMES HALL

Sign: VERIFICATION OF VISIT NOT DATA __/__/__

LAND SECTION (First 7 lines only)

Use Code	Description	LUC Fact	No of Units	Depth / PriceUnits	Unit Type	Land Type	LT Factor	Base Value	Unit Price	Adj	Neigh	Neigh Influ	Neigh Mod	Infl 1	%	Infl 2	%	Infl 3	%	Appraised Value	Alt Class	%	Spec Land	J Code	Fact	Use Value	Notes
903	MUNICPL		1394356		SQ. FT.	SITE		0	21.	0.41	N4									11,964,704						11,964,700	86-8-1 & 36-8-2 .9

Total AC/HA:	32.01001	Total SF/SM:	1394356	Parcel LUC:	903	MUNICPL	Prime NB Desc	N4	Total:	11,964,700	Spl Credit		Total:	11,964,700

EXTERIOR INFORMATION

Type: 06	- COLONIAL
Sty Ht: 2	- 2
(Liv) Units: 1	Total: 2
Foundation: 03	- BRK/STN
Frame: 01	- WOOD
Prime Wall: 01	- WOOD SHING
Sec Wall:	%
Roof Struct: 01	- GABLE
Roof Cover: 1	- ASPHALT
Color: WHITE	
View / Desir:	

GENERAL INFORMATION

Grade: C	- AVERAGE
Year Blt: 1890	Eff Yr Blt:
Alt LUC:	Alt %:
Jurisdict:	Fact:
Const Mod:	
Lump Sum Adj:	

NTERIOR INFORMATION

Avg Ht/FL: STD	
Prim Int Wal 02	- PLASTER
Sec Int Wall:	%
Partition: T	- TYPICAL
Prim Floors: 02	- SOFTWOOD
Sec Floors: 04	- CARPET 50 %
Bsmnt Flr: 12	- CONCRETE
Subfloor:	
Bsmnt Gar:	
Electric: 03	- TYPICAL
Insulation: 02	- TYPICAL
Int vs Ext: S	
Heat Fuel: 02	- GAS
Heat Type: 03	- FORCED H/W
# Heat Sys: 1	
% Heated: 100	% AC:
Solar HW: NO	Central Vac: NO
% Com Wal	% Sprinkled

BATH FEATURES

Full Bath	2	Rating:	Average
A Bath:		Rating:	
3/4 Bath:		Rating:	
A 3QBth		Rating:	
1/2 Bath:		Rating:	
A HBth:		Rating:	
OthrFix:		Rating:	

OTHER FEATURES

Kits:	1	Rating:	Average
A Kits:		Rating:	
Frpl:	1	Rating:	Average
WSFlue:		Rating:	

CONDO INFORMATION

Location:	
Total Units:	
Floor:	
% Own:	
Name:	

DEPRECIATION

Phys Cond:	AV - Average	31. %
Functional:		%
Economic:		%
Special:		%
Override:		%
	Total:	31 %

CALC SUMMARY

Basic $ / SQ:	170.00
Size Adj.:	1.01395357
Const Adj.:	1.00000000
Adj $ / SQ:	172.372
Other Features:	58500
Grade Factor:	1.00
NBHD Inf:	1.00000000
NBHD Mod:	
LUC Factor:	1.00
Adj Total:	399047
Depreciation:	123705
Depreciated Total:	275342

COMMENTS

LOT # : 338 TRAPELO ROAD COMBINED TO 282 TRAPELO RD. R036 008 0002 COMBINED FOR FY2004.

RESIDENTIAL GRID

1st Res Grid	Desc:										# Units		
Level	FY	LR	DR	D	K	FR	RR	BR	FB	HB	L	O	
Other													
Upper													
Lvl 2													
Lvl 1													
Lower													
Totals	RMs:		BRs:		Baths: 2		HB						

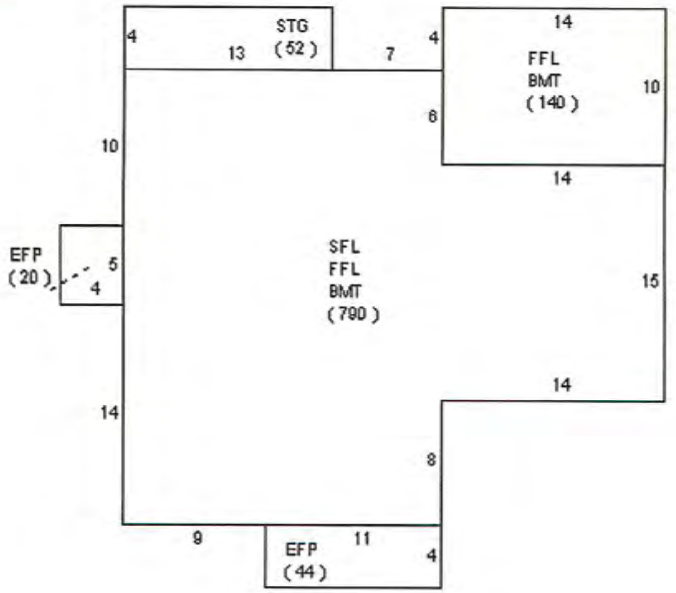
REMODELING

Exterior:	
Interior:	
Additions:	
Kitchen:	
Baths:	
Plumbing:	
Electric:	
Heating:	
General:	

RES BREAKDOWN

No Unit	RMS	BRS	FL
Totals			

SKETCH



SUB AREA

Code	Description	Area - SQ	Rate - AV	Undepr Value
BMT	BASEMENT	930	43.090	40,077
FFL	FIRST FLOOR	930	172.370	160,306
SFL	SECOND FLOOR	790	172.370	136,174
EFP	ENCL PRCH	64	55.350	3,542
STG	SM STORAGE	52	8.620	448

SUB AREA DETAIL

Sub Area	% Usbl	Descrip	% Type	Qu	# Ten

COMPARABLE SALES

Rate	Parcel ID	Typ	Date	Sale Price

WtAv$/SQ:		AvRate:	Ind.Val
Juris. Factor:		Before Depr:	172.37
Special Features:	0	Val/Su Net:	99.53
Final Total:	275300	Val/Su SzAd	160.06

Net Sketched Area:	2,766			Total:	340,547
Size Ad	1720	Gross Area	2766	FinArea	1720

IMAGE

AssessPro Patriot Properties, Inc

MOBILE HOME

Make:	Model:	Serial #	Year:	Color:

SPEC FEATURES/YARD ITEMS

PARCEL ID R036 008 0001

Code	Description	A	Y/S	Qty	Size/Dim	Qual	Con	Year	Unit Price	D/S	Dep	LUC	Fact	NB Fa	Appr Value	JCod	JFact	Juris. Value

More: N | Total Yard Items: | Total Special Featues: | Total:

R036	008	0001		2 of 2	RESIDENTIAL
Map	Block	Lot	Unit	CARD	**City of Waltham**

	Total Card /	Total Parcel
APPRAISED:	428,500/	12,668,500
USE VALUE:	428,500/	12,668,500
ASSESSED:	428,500/	12,668,500

PROPERTY LOCATION

No	Alt No	Direction/Street/City
338		TRAPELO RD, WALTHAM

OWNERSHIP

Unit #:

Owner 1:	CITY OF WALTHAM	
Owner 2:		
Owner 3:		
Street 1:	610 MAIN ST	
Street 2:		
Twn/City:	WALTHAM	
St/Prov:	MA	Cntry:
Postal:	02452-5552	Own Occ: / Type:

PREVIOUS OWNER

Owner 1:			
Owner 2:			
Street 1:			
Twn/City:			
St/Prov:		Cntry:	
Postal:			

NARRATIVE DESCRIPTION

This parcel contains 1,394,356 SQ. FT. of land mainly classified as MUNICPL with a COLONIAL Building built about 1830, having primarily ASBESTOS Exterior and 3353 Square Feet, with 1 Unit, 2 Baths, 0 3/4 Bath, 0 HalfBath, 0 Rooms, and 0 Bdrm.

OTHER ASSESSMENTS

Code	Descrip/No	Amount	Com. Int

PROPERTY FACTORS

Item	Code	Description	%	Item	Code	Description
Z				water		
o				Sewer		
n				Electri		
Census:				Exmpt		
Flood Haz:						
D	0	test		Topo		
s				Street	41	41
t				Gas:		

IN PROCESS APPRAISAL SUMMARY

Use Code	Land Size	Building Value	Yard Items	Land Value	Total Value
903	0.000	422,800	5,700		428,500
Total Card	0.000	422,800	5,700		428,500
Total Parcel	32.010	698,100	5,700	11,964,700	12,668,500

Source: Market Adj Cost | Total Value per SQ unit /Card: 127.82 | /Parcel: 2,497.

PREVIOUS ASSESSMENT

Parcel ID: R036 008 0001

Tax Yr	Use	Cat	Bldg Value	Yrd Items	Land Size	Land Value	Total Value	Asses'd Value	Notes	Date

SALES INFORMATION

TAX DISTRICT: | PAT ACCT.

Grantor	Legal Ref	Type	Date	Sale Code	Sale Price	V	Tst	Verif	Notes

BUILDING PERMITS

Date	Number	Descrip	Amount	C/O	Last Visit	Fed Code	F. Descrip	Comment

ACTIVITY INFORMATION

Date	Result	By	Name
4/22/2005	MEASURED	345	JAMES HALL

Sign: VERIFICATION OF VISIT NOT DATA __/__/__

LAND SECTION (First 7 lines only)

Use Code	Description	LUC Fact	No of Units	Depth / PriceUnits	Unit Type	Land Type	LT Factor	Base Value	Unit Price	Adj	Neigh	Neigh Influ	Neigh Mod	Infl 1	%	Infl 2	%	Infl 3	%	Appraised Value	Alt Class	%	Spec Land	J Code	Fact	Use Value	Notes
903	MUNICPL		0		SQ. FT.	SITE		0	0.	0.00	N4																

Total AC/HA: 0.00000 | Total SF/SM: 0 | Parcel LUC: 903 | MUNICPL | Prime NB Desc: N4 | Total: | Spl Credit | Total:

LAST REV

Date	Time
08/10/16	13:34:22
apro	
113077	

PRINT

Date	Time
12/10/21	11:25:39

User Acct	GIS Ref	GIS Ref	Insp Date
113077			04/22/05

!113077!

Entered Lot Size | Total Land: | Land Unit Type:

Patriot Properties Inc.

USER DEFINED

Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
ASR Map:	
Fact Dist:	
Reval Dist:	
Year:	
LandReason:	
BldReason:	
CivilDistrict:	
Ratio:	

EXTERIOR INFORMATION

Type:	06 - COLONIAL
Sty Ht:	2H - 2H
(Liv) Units:	1 Total: 2
Foundation:	03 - BRK/STN
Frame:	01 - WOOD
Prime Wall:	05 - ASBESTOS
Sec Wall:	%
Roof Struct:	01 - GABLE
Roof Cover:	01 - ASPHALT
Color:	RED
View / Desir:	

GENERAL INFORMATION

Grade:	C - AVERAGE
Year Blt:	1830 Eff Yr Blt:
Alt LUC:	Alt %:
Jurisdict:	Fact:
Const Mod:	
Lump Sum Adj:	

INTERIOR INFORMATION

Avg Ht/FL:	STD
Prim Int Wal	02 - PLASTER
Sec Int Wall:	%
Partition:	T - TYPICAL
Prim Floors:	03 - HARDWOOD
Sec Floors:	%
Bsmnt Flr:	
Subfloor:	
Bsmnt Gar:	1
Electric:	03 - TYPICAL
Insulation:	02 - TYPICAL
Int vs Ext:	S
Heat Fuel:	01 - OIL
Heat Type:	03 - FORCED H/W
# Heat Sys:	1
% Heated:	100 % AC:
Solar HW:	NO Central Vac: NO
% Com Wal	% Sprinkled

BATH FEATURES

Full Bath	2	Rating:	Average
A Bath:		Rating:	
3/4 Bath:		Rating:	
A 3QBth		Rating:	
1/2 Bath:		Rating:	
A HBth:		Rating:	
OthrFix:		Rating:	

OTHER FEATURES

Kits:	2	Rating:	Average
A Kits:		Rating:	
Frpl:		Rating:	
WSFlue:		Rating:	

CONDO INFORMATION

Location:	
Total Units:	
Floor:	
% Own:	
Name:	

DEPRECIATION

Phys Cond:	AV - Average	31. %
Functional:		%
Economic:		%
Special:		%
Override:		%
	Total:	31 %

CALC SUMMARY

Basic $ / SQ:	170.00
Size Adj.:	0.86107385
Const Adj.:	0.97000003
Adj $ / SQ:	141.991
Other Features:	81500
Grade Factor:	1.00
NBHD Inf:	1.00000000
NBHD Mod:	
LUC Factor:	1.00
Adj Total:	612720
Depreciation:	189943
Depreciated Total:	422777

COMMENTS

LOT # : 338 TRAPELO ROAD. INCLUDES 36-8-2.

RESIDENTIAL GRID

1st Res Grid	Desc:	# Units

Level	FY	LR	DR	D	K	FR	RR	BR	FB	HB	L	O
Other												
Upper												
Lvl 2												
Lvl 1												
Lower												

Totals	RMs:	BRs:	Baths: 2	HB

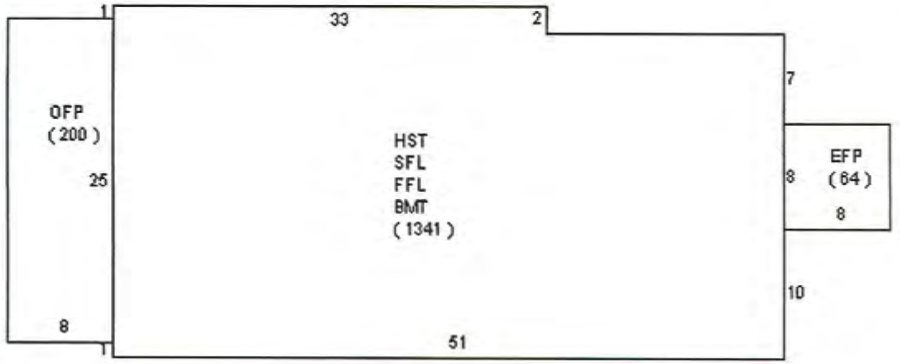
REMODELING

Exterior:	
Interior:	
Additions:	
Kitchen:	
Baths:	
Plumbing:	
Electric:	
Heating:	
General:	

RES BREAKDOWN

No Unit	RMS	BRS	FL
Totals			

SKETCH



SUB AREA

Code	Description	Area - SQ	Rate - AV	Undepr Value
BMT	BASEMENT	1,341	35.500	47,603
FFL	FIRST FLOOR	1,341	141.990	190,410
SFL	SECOND FLOOR	1,341	141.990	190,410
HST	HALF STORY	671	141.990	95,205
OFP	OPEN PORCH	200	20.250	4,050
EFP	ENCL PRCH	64	55.350	3,542

Net Sketched Area:	4,958	Total:	531,220
Size Ad	3352.5 Gross Area	5628 FinArea	3353

SUB AREA DETAIL

Sub Area	% Usbl	Descrip	% Type	Qu	# Ten

COMPARABLE SALES

Rate	Parcel ID	Typ	Date	Sale Price

WtAv$/SQ:		AvRate:	Ind.Val
Juris. Factor:		Before Depr:	141.99
Special Features:	0	Val/Su Net:	85.28
Final Total:	422800	Val/Su SzAd	126.11

MOBILE HOME

Make: Model: Serial # Year: Color:

SPEC FEATURES/YARD ITEMS

Code	Description	A	Y/S	Qty	Size/Dim	Qual	Con	Year	Unit Price	D/S	Dep	LUC	Fact	NB Fa	Appr Value	JCod	JFact	Juris. Value
)3	GARAGE	D	Y	1	21X21	A	AV	1980	18.60	T	30	903			5,700			5,700

More: N | Total Yard Items: 5,700 | Total Special Featues: | Total: 5,700

PARCEL ID

R036 008 0001

IMAGE

AssessPro Patriot Properties, Inc