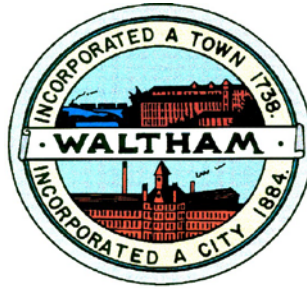


The City of Waltham



**Invites
Interested Parties
To propose the best offer and or bid
For the service or product herewith described:**

IDDE WORK PACKAGE, 2017

The bid opening will be held: 10:00 AM Thursday September 7,

A pre-bid conference will be held: 10:00 AM Thursday July 27, 2017

(Meet in the Auditorium of 119 School Street, Waltham, MA 02452)

Last day for written questions: 12 Noon July 28, 2017

Via email only to Jpedulla@city.waltham.ma.us)

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MWRA Discharge Permit

DIVISION 0

SECTION 00050

CITY OF WALTHAM MASSACHUSETTS

INVITATION TO BID

IDDE Work Package, 2017

The Work under this Contract includes, but is not necessarily limited to, furnishing and installing cured-in-place pipe (CIPP) liner for approximately 1,425 linear feet of 8-inch sewer pipe and 380 linear feet of 15-inch drain pipe; service lateral connection re-instatement after new CIPP liner installation; full wrap service lateral connections; service lateral cutting of protruding laterals; manhole rehabilitation and lining; and root removal. The project also sewer bypass, permitting, traffic management and all other appurtenances, materials, equipment, and labor required to complete the project.

PLANS, SPECIFICATIONS and other Contract Documents may be obtained by visiting the city's web site at www.city.waltham.ma.us/open-bids or by e-mail request to jpedulla@city.waltham.am.us Beginning **July 19, 2017 after 4 pm.** Documents will **not** be mailed.

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 **10:00 AM Thursday September 7, 2017**, at which place and time they shall be publicly opened, read aloud and recorded for presentation to the Awarding Authority.

A **PRE-BID CONFERENCE** will be held for all interested parties at **10:00 AM Thursday July 27, 2017 meet in the Auditorium of 119 School Street, Waltham, MA 02452.** 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. 12 Noon Thursday July 28, 2017 via e-mail to jpedulla@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. Bid deposits will be dealt with as provided in Massachusetts General Laws, Chapter 149, Section 44B.

To be given consideration, all general bids must be accompanied by the completed documents in the COMPLIANCE Section.

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 can be obtained from the City web site at www.city.waltham.ma.us/open-bids. The prevailing Wage Schedule is made part, as reference, of the Contract. Bidders' selection procedures and contract award shall be in conformity with applicable statutes of the Commonwealth of Massachusetts.

INVITATION TO BID 00050 - 1

Performance and Labor and Materials payment bonds 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 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 a NAMED Additional Insured with a waiver of subrogation, for General Liability and Vehicle Liability in the amount of \$500,000 per occurrence and \$1,000,000 in the aggregate and Worker's Compensation Insurance as prescribed by law.

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.

No Electronic Signatures will be accepted in the submitted documents.

During the Bid Period **all questions must be directed in writing to John Martino, City Engineer, at jmartino@city.waltham.ma.us**. Responses will be prepared and sent to all vendors of record via addenda. In addition, addenda will be posted in the City Web Site at www.city.waltham.ma.us/open-bids

CITY OF WALTHAM

Joseph Pedulla, Chief Procurement Officer
Purchasing Department
City Hall, 610 Main Street
Waltham, MA 02452

END OF SECTION

**INVITATION TO BID
00050 - 2**

PART 1 - GENERAL

SECTION 00100 - INSTRUCTION TO BIDDERS

1.01 SCHEDULE OF DATES

- A. Deadline for Advertisement for Bids: Central Register – Nov. 14, 2012, 4:00 P.M.
- B. Advertisement appears in Central Register, Plans and Specifications ready for Bidders **after 4:30 P.M. on July 19, 2017.**
- C. Pre-bid walkthrough on **July 27, 2017 at 10:00 A.M.** Meet in the Auditorium at 119 School Street, Waltham
- D. Questions and requests for interpretations may be submitted in writing by the Bidders to jpedulla@city.waltham.ma.us up to and including: **12 Noon Thursday July 28, 2017**
- E. Addenda will be issued with answers to posed questions and interpretations as determined by the City.
- F. General Bids Deadline: **10:00 A.M. Thursday September 7, 2017**, in the Purchasing Department, City Hall, 610 Main Street, Waltham, MA 02452, Attn: Joseph Pedulla, Chief Procurement Officer, where the bids will be publicly open and read.

1.012 BUDGET

- A. The budget for this project has not been determined. In the event that the low qualified General Contractor's bid exceeds this amount, the City may withdraw the project until additional funds are secured.

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.

INSTRUCTION TO BIDDERS 00100 - 1

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 from 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 shall visit the site of the proposed work and fully acquaint himself with conditions as they exist, and shall 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.
- 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, Section 00310" enclosed. Erasures or other changes must be explained or noted over the signature of the bidder.
- B. All 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: _Beaver Street Area 5A Relief Sewer

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 30, 39M 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

INSTRUCTION TO BIDDERS 00100 - 3

General Bid in accordance with Section 44F, 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 Ninety (90) 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 **July 27, 2017 at 10:00 A.M.** meet in the auditorium of 119 School Street in Waltham, MA. Interested parties are encouraged to attend given that this will be the only time the building is open 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 LEFT BLANK

1.14 CONTRACT DOCUMENTS

- A. Contract documents are available on line only at www.city.waltham.ma.us/open-bids .

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 Completed in Final in **100 calendar days** following the date of the Notice-to-Proceed.

1.18 Left Blank

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 on site or at a city location to be named.

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 MINIMUM WAGE SCHEDULE

- A. Bids shall be made on the basis of the Minimum Wage Schedule, as determined by the Commissioner of Labor and Industries, pursuant to the provision of Chapter 149, Section 26 to 27D inclusive, of the Massachusetts General Laws. **The prevailing wage schedule can be found in the City web site at www.city.waltham.ma.us/open-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 NOTICE TO PROCEED ORDERS

- A. No bidder is to proceed without a Notice-To-Proceed (NTP) order as set out in the contract.

1.25 STAGING

- A. The General Contractor shall provide all the vertical access (which includes staging, vertical lifts, etc.) for the work of the Contract for the General Bidder.

1.26 COMPLIANCE WITH MASSACHUSETTS GENERAL LAWS

- A. Before a contract may be executed by the City, the successful Bidder will be required, in accordance with the provisions of M.G.L. Chapter 62C, Section 49A, to execute and file with the City the following certificate:
- B. 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 tunnel 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 \$ 500,000 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 Contractor's 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 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.

INSTRUCTION TO BIDDERS 00100 - 7

1.31 BUILDING PERMIT FEES

- A. City-issued building permit fees, if any, will be waived for this project. However all permits must be obtained from the appropriate City Department

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.

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.

3.1 RETAINAGE.

The retainage applied to this project is 7.5% for Materials and 7.5% for Labor

3.2 Section left blank intentionally

Signature of Individual or Corporate Name

By:

(Signature of Corporate Officer if applicable)

Title: _____

Social Security Number or Federal Identification Number: _____

END OF SECTION

**INSTRUCTION TO BIDDERS
00100 - 8**

SECTION 00200

COMPLIANCE FORMS

(PLEASE COMPLETE AND SUBMIT THESE FORMS WITH YOUR RESPONSE)

NON-COLLUSION FORM AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

_____, _____
(Signature of person signing bid or proposal) Date

(Name of business)

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, & 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____, _____
Signature of person submitting bid or proposal Date

Name of business

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

CERTIFICATE OF VOTE OF AUTHORIZATION

(NO ELECTRONIC SIGNATURES WILL BE ACCEPTED)

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 seal, 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: _____

CORPORATION IDENTIFICATION

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state _____

President _____

Treasurer _____

Secretary _____

Federal ID Number _____

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?

Yes _____, No _____

If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)

Name of partner _____

Residence _____

Name of partner _____

Residence _____

If an Individual:

Name _____

Residence _____

If an Individual doing business under a firm's name:

Name of Firm _____

Name of Individual _____

Business Address _____

Residence _____

Date _____

Name of Bidder _____

By _____

Signature _____

Title _____

Business Address (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

City

State

Telephone Number

Today's Date

**COMPLIANCE
00200 - 12**

**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

_____, 201__

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 _____, Date _____

Company Name: _____

Project Name: _____

Awarding Auth.: _____

Work Week Ending: _____

☐ Prime Contractor

☐ Subcontractor

List Prime Contractor: _____

Employer Signature: _____

Print Name & Title: _____

☐ Final Report

[illegible]

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

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.

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 _____

10 HOURS OSHA TRAINING CONFIRMATION

Chapter 306 of the Acts of 2004

CONSTRUCTION PROJECTS

AN ACT RELATIVE TO THE HEALTH AND SAFETY ON PUBLIC

The undersigned hereby certifies that all employees to be employed at a worksite for construction, reconstruction, alteration, remodeling, repair, installation, demolition, maintenance or repair of any public work or any public building estimated to cost more than \$10,000.00 have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first payroll report for each employee and will comply with all laws and regulations applicable to awards of subcontracts subject to section 44F.

Company Name: _____

Address: _____

Signature: _____

Title: _____

Print Name _____

Date _____

See following Chapter 306 of the Acts of 2004

**Request for Taxpayer
Identification Number and Certification**

Give Form to the
requester. Do not
send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Business name/disregarded entity name, if different from above

Check appropriate box for federal tax classification:

☐ Individual/sole proprietor ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶

☐ Other (see instructions) ▶

Address (number, street, and apt. or suite no.)

City, state, and ZIP code

List account number(s) here (optional)

Requester's name and address (optional)
Chief Procurement Officer
Purchasing Department, City of
610 Main
Waltham, MA

☐ Exempt payee

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number

 - -

Employer identification number

 -

Fill out this
either SS or

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

**Sign
Here**

Signature of
U.S. person ▶

Date ▶

Sign &

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

SECTION 00301

BID FORM

To the City of Waltham, Massachusetts:

Regarding: IDDE Work Package 2017

The OWNER reserves the right to reject any bid in the event that any bid item or items are obviously unbalanced or appear to the OWNER to be so unbalanced as to affect or to be liable to affect adversely any interest of the OWNER.

The OWNER reserves the right to reject any or all bids if it deems it to be in its best interest to do so. The OWNER reserves the right to award the Contract based on sufficiency of appropriated funds to complete the work.

The undersigned states that no officer, agent or employees of the OWNER directly or indirectly has a financial interest in this Bid.

The Undersigned, as Bidder, declares as follows:

- The only parties interested in this BID as Principals are named herein;
- this BID is made without collusion with any other person, firm, or corporation;
- no officer, agent, or employee of the OWNER is directly or indirectly interested in this BID;
- the Bidder has carefully examined the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and has carefully read and examined the annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;
- understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered will be the same as those shown within the Contract Documents and agrees that the Bidder shall not use or be entitled to use any such information made available to him through the Contract Documents or otherwise or obtained by him in his own examination of the site, as a basis of or ground for any claim against the OWNER or the Engineer arising from or by reason of any variance which may exist between the aforesaid information made available to or acquired by him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and has made due allowance therefore in this BID;

- and the Bidder understands that the quantities of work tabulated in this BID or indicated in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer;
- and agrees that, if this BID is accepted will contract with the OWNER, as provided in the copy of the Contract Documents deposited in the office of the Engineer, this BID form being part of said Contract Documents, and that the Bidder will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other things required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the Engineer as therein set forth, and that the Bidder will take in full payment therefore the lump sum or unit price applicable to each item of the Work as stated in the schedule below:

Bidders must bid on each item of the Bid. Unbalanced bids may be rejected. All entries in the entire BID must be made clearly and in ink; prices bid must be written in both words and figures. In case of discrepancy, the amount shown in words will govern.

Bidders shall insert extended item prices obtained from quantities and unit prices. In case of discrepancy between the products obtained by multiplying the estimated quantity by the unit price, the actual product shall apply. In case of discrepancy between the sum of the total figure of the items and the total amount listed, the actual sum shall apply.

Bidders shall provide a balanced bid where each lump sum or unit price submitted adequately accounts for all work, including but not necessarily limited to, labor, equipment and incidentals necessary to complete the work required by the Contract Documents in the prescribed manner and within the allotted time frame.

In the event the lowest bids from responsive and responsible bidders are tied, the following methods of breaking the tie shall be employed unless otherwise provided for in these bid documents: The bidder's names shall be entered on a slip of paper and placed in a hat. The award shall then be made to the bidder whose slip is drawn from the hat. The drawing of the slip from the hat shall be performed in the presence of the tied bidders unless they waive their right to be present in writing.

Refer to Section 01024 - Measurement and Payment for Item Descriptions.

Addenda: This BID includes Addenda numbered _____ to _____ (To be filled in by Bidder if Addenda are issued.)

(Bidder) _____

(by) _____

(Title) _____

BASE BID

The Base Bid includes all the work of the General Bidder, being all work covered by items 1 through 14, inclusive.

Item No.	Item Description and Unit Price	Units	Estimated Quantity	Unit Price (In Figures)	Extended Total (In Figures)
1	Mobilization & Demobilization				
	Dollars and Cents	LS	1	\$	\$
2	Root Removal and Heavy Cleaning				
	Dollars and Cents	LF	1070	\$	\$
3a	CIPP Lining, 15-inch Drain Pipe				
	Dollars and Cents	LF	380	\$	\$
3b	CIPP Lining, 8-inch Sewer Pipe				
	Dollars and Cents	LF	1425	\$	\$
4	Cut Protruding Service Connection				
	Dollars and Cents	EA	15	\$	\$
5	Reinstate Service Connections				
	Dollars and Cents	EA	35	\$	\$
6	Service Lateral Connections (Full Wrap)				
	Dollars and Cents	EA	35	\$	\$
7	Manhole Grouting to Stop Leak				
	Dollars and Cents	LS	1	\$	\$
8	Lining of Manholes				
	Dollars and Cents	VF	100	\$	\$

Item No.	Item Description and Unit Price	Units	Estimated Quantity	Unit Price (In Figures)	Extended Total (In Figures)
9	Rebuild Manhole Invert Channel				
	Dollars and Cents	EA	10	\$	\$
10	Clean and CCTV Inspection – 8” Sewer (Oak Hill Road)				
	Dollars and Cents	LF	335	\$	\$
11	Pre and Post Construction Flow Isolation/Estimation				
	Dollars and Cents	LS	1	\$	\$
12	Police Officer Details				
	Forty-Eight Forty				
	Dollars and Cents	HR	800	\$ 48.40	\$ 38,720.00
13	Traffic Management				
	Dollars and Cents	LS	1	\$	\$
14	Miscellaneous Work				
	Dollars and Cents	LS	1	\$	\$
		Total			\$

Total Amount of Base Bid (Items 1 through 14 inclusive).

\$

(Amount in figures)

(Amount in words)

Basis of Award: The basis of award shall be at the OWNER’s sole discretion. Contract to be awarded to the lowest responsible and eligible bidder in compliance with Sections 39M inclusive of Chapter 30 of the General Laws of the Commonwealth of Massachusetts.

Requirements: Specific items of this Contract may be eliminated or reduced in quantity to keep within limits of available funding, at the OWNER’S option. All of the above items shall include all labor, materials, equipment, hauling, disposal, transportation, overhead, profit and insurance to cover the work as required in the Contract Documents.

The undersigned agrees that for extra work, if any, will be performed in accordance with Article 10 of the General Conditions of the Contract and will be paid for in accordance with Article 11 of the General Conditions of the Contract.

An unbalanced or unreasonable lump sum and/or unit price submitted herein may be considered as non-responsive to the Instructions to Bidders.

The bid security accompanying this BID shall be in the amount of five percent (5%) of the BID.

The Bidder, by submittal of this BID, agrees with the OWNER that the amount of the bid security deposited with this BID fairly and reasonably represents the amount of damages the OWNER will suffer due to the failure of the Bidder to fulfill his agreements as above provided.

As provided in the INSTRUCTIONS TO BIDDERS, the Bidder hereby agrees that he will not withdraw this BID within thirty (30) consecutive calendar days after the actual date of the opening of Bids and that, if the OWNER shall accept this BID, the Bidder will duly execute and acknowledge the AGREEMENT and furnish, duly executed and acknowledged, the required CONTRACT BONDS within ten (10) days after notification that the AGREEMENT and other Contract Documents are ready for signature.

If this BID is accepted by the OWNER, the undersigned agrees to complete the entire work provided to be done under the Contract within **75 calendar days**, from the date of the Notice-to-Proceed. Liquidated damages for each calendar day of delay shall be \$1,000 as stipulated in the AGREEMENT.

A performance bond in an amount equal to 100 percent of the total amount of the bid with a surety company qualified to do business in the Commonwealth of Massachusetts will be required for the faithful performance of the contract, as well as a labor and materials bond in an amount equal to 100 percent of the total bid amount.

Should the Bidder fail to fulfill any of his agreements as hereinabove set forth, the Owner shall have the right to retain as liquidated damages the amount of the bid check or cash which shall become the Owner's property. If a bid bond was given, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety.

The undersigned as Bidder, hereby certifies that he is aware of the applicable requirements of the Williams-Steiger Occupational Safety and Health Act of 1970. (O.S.H.A.), and all latest revisions thereto, and that this Proposal is prepared on the basis of compliance with those requirements.

The undersigned as Bidder, hereby certifies that he will maintain records in reasonable detail, which accurately and fairly reflect the financial transactions and disposition of the Bidder, in accordance with M.G.L. Chapter 30, Section 30R.

The undersigned hereby certifies 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 and that he will comply fully with all laws and regulations applicable to awards made subject to MGL Ch. 30, Section 39M. The bidding and award of the contract will be in full compliance with Section 39M inclusive of Chapter 30 of the General Laws of the Commonwealth of Massachusetts as last revised.

The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section

twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Pursuant to G.L. c.62C, §49A, the undersigned bidder certifies under penalties of perjury that the he/she/it has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

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. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The attached FORM OF NON-COLLUSION AFFIDAVIT must be signed and submitted as part of the Bid Proposal.

This Proposal must bear the written signature of the Bidder or that of his duly authorized agent. If the Bidder is a corporation or a partnership, the bid must be signed by a duly authorized officer of such corporation or by a Partner and the title of such officer must be stated. Satisfactory completion of the following data is an essential part of submission of this Proposal and is required. Bid must be embossed with corporate seal.

(SEAL)

(Name of Bidder)

By _____
(Signature and title of authorized representative)

Date _____

(Telephone)

(Business address)

(Fax Number)

(City and State)

My Company acknowledges Receipt of addenda #: _____, _____, _____, _____, _____, _____, _____.

The following documents are attached to and made a condition of the bid, and shall be filed with the bid:

- Bid Security (5%)
- Completed and signed Bid Proposal (Section 00301)
- Completed Form of Non-Collusive Affidavit
- Completed Certificate of Corporate Vote (Corporation Only)
- Completed Certificate as to Payment of State Taxes
- Completed Certificate of 10 Hour OSHA Training

END OF SECTION 00301

SECTION 00520

AGREEMENT

This Agreement is made this _____ day of _____ in the year two thousand fourteen between the City of Waltham, hereinafter called City of Waltham and _____ hereinafter called Contractor.

City of Waltham and Contractor hereby agree as follows:

ARTICLE 1 WORK

- 1.1 Contractor shall complete all Work as specified or indicated in the Contract Documents.

ARTICLE 2 ENGINEER

- 2.1 Engineer will act as the City of Waltham's representative, assuming all duties and responsibilities, rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 3 CONTRACT TIMES

3.1 Dates for Final Payment

- A. The Work will be completed and ready for final payment **within 75 days from the date of the Notice to Proceed.**

3.2 Liquidated Damages

- A. Contractor and the City of Waltham recognize that time is of the essence and that the City of Waltham will suffer financial loss if the Work is not completed within the times specified in Paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal litigation proceeding the actual loss suffered by the City of Waltham if the Work is not completed on time. Accordingly, instead of requiring any such proof, the City of Waltham and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay the City of Waltham **\$1,000 for each day** that expires after the time specified in Paragraph 3.1 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 4 CONTRACT PRICE

- 4.1 The City of Waltham shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the prices stated in Contractor's Bid, attached hereto as an exhibit.
- 4.2 The total amount will be adjusted by measurement of actual installed quantities in strict conformity with the provisions contained herein.
- 4.3 The total amount will be adjusted on a monthly basis when the monthly cost change for each of the following exceeds plus or minus five percent: fuel (both diesel and gasoline), asphalt, and Portland cement contained in concrete. Section 01270 contains monthly price adjustment provisions for each of the above materials.

ARTICLE 5 PAYMENT PROCEDURES

- 5.1 Applications for Payment shall be processed in accordance with Article 14 of the General Conditions and in accordance with Massachusetts General Law.
- 5.2 The City of Waltham shall make progress payments on account of the Contract Price on the basis of processed Applications for Payment monthly during construction. All progress payments will be measured by the schedule of values established in Paragraph 2.07.A of the General Conditions, or in the event there is no schedule of values, as provided in the General Requirements.
- 5.3 The City of Waltham shall retain from progress payments 5 percent of the value of Work completed.
- 5.4 A retainage of 5% for materials and 5% for labor shall be applied to all payment requests.

ARTICLE 6 CONTRACTOR'S REPRESENTATIONS

- 6.1 Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - B. Contractor has visited the site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied all:
 1. reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except

Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and

- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referenced in Paragraph 6.1 above, Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. Contractor is aware of the general nature of Work to be performed by City of Waltham and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given the City of Waltham written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 7 CONTRACT DOCUMENTS

7.1 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 00520-1 to 00520-7, inclusive);
 - 2. Performance Bond;
 - 3. Payment Bond;
 - 4. General Conditions (title pages, table of contents, and pages 00700-1 to 00700-62, inclusive);
 - 5. Supplementary Conditions (pages 00800-1 to 00800-13, inclusive);

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00520-3

Agreement

6. General Requirements (Division 1);
7. Specifications (Divisions 2 and 13);
8. Appendices to the Specifications (Appendix A, B, and C);
9. Drawings consisting of a cover sheet and sheets numbered 1 through 16, inclusive, with each sheet bearing the following general title: SSO Mitigation Project, Area 1314A, Sanitary Sewer System Rehabilitation;
10. Addenda (numbers _____ to _____, inclusive);
11. Compliance Documents
12. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 00410-1 to 00410-13, inclusive);
 - b. Documentation submitted by Contractor prior to Notice of Award;
13. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed;
 - b. Written Amendments;
 - c. Work Change Directives;
 - d. Change Order(s).
- B. The documents listed in Paragraph 7.1.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in paragraph 3.04 of the General Conditions.

ARTICLE 8 MISCELLANEOUS

8.1 Terms

- A. Terms used in this Agreement will have the meanings indicated in the General Conditions and the Supplementary Conditions.

8.2 Assignment of Contract

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction

may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

8.3 Successors and Assigns

- A. The City of Waltham and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

8.4 Severability

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon the City of Waltham and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

8.5 Contractor Certifications

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.5:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of the City of Waltham, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive the City of Waltham of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of the City of Waltham, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.6 LEFT BLANK INTENTIONALLY

- 8.7 The Contractor shall not discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age, or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.
- 8.8 The Contractor shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue code 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.
- 8.9 The Contractor agrees that it will fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons). The Contractor shall not award any subcontracts or purchase any materials from suppliers that appear on the Excluded Parties List System. The Contractor shall include this requirement in each subcontract and require it to be included in all subcontracts regardless of tier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.

IN WITNESS WHEREOF, the City of Waltham and Contractor have signed this Agreement. Counterparts have been delivered to the City of Waltham and Contractor. All portions of the Contract Documents have been signed or identified by the OwnerCity of Waltham and Contractor or on their behalf.

This Agreement will be effective on _____, _____ (which is the Effective Date of the Agreement).

CITY OF WALTHAM:

CONTRACTOR:

By: Jeannette A. McCarthy

By: _____

Title: Mayor _____

Title: _____

[CORPORATE SEAL]

Attest _____

Stephen Casazza, City Engineer

Address for giving notices:

Date: _____

Joseph Pedulla, Purchasing Agent

License No. _____

(Where applicable)

Date: _____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Luke Stanton Asst. City Solicitor

Date: _____

As to form only

Paul Centofanti, Auditor

Date: _____

Attests as to the availability of funds

As required by M.G.L. Chapter 44
Section 31c, this is to certify that the
City of Waltham has an appropriation
which is adequate to cover the cost of
this Contract.

W-2046/12/16/14

00520-7

Agreement

END OF SECTION

Section 00610

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

(seal)

Contractor's Name and Corporate Seal

(seal)

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____

Signature

Title

Attest: _____

Signature

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the

Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the

amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall

be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

(seal)

Contractor's Name and Corporate Seal

(seal)

Surety's Name and Corporate Seal

By: _____

Signature

Print Name

Title

By: _____

Signature *(attach power of attorney)*

Print Name

Title

Attest: _____

Signature

Attest: _____

Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

- 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
- 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and

- the basis for challenging any amounts that are disputed; and
- 7.2 Pay or arrange for payment of any undisputed amounts.
- 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be

deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the

agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

Section 00700

Massachusetts State Wage Rates

The prevailing wage rates for this project are found at
www.city.waltham.ma.us/open-bids

008600 - CONSTRUCTION PERMIT APPLICATIONS AND FEES

1.1 GENERAL

1. The City of Waltham has waived all fees for this Project; Contractor is required to file an Application and obtain all pertinent Permits before construction.
2. Contractor shall be responsible for all costs associated with fire watches and other ancillary fees (other than those waived) required to perform the Contract work.
3. Obtain forms from Building Department.

END OF DOCUMENT

DIVISION 1

DIVISION 1
GENERAL REQUIREMENTS
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SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY

- A. The Work under this Contract includes, but is not necessarily limited to, furnishing and installing cured-in-place pipe (CIPP) liner for approximately 1,425 linear feet of 8-inch sewer pipe and 380 linear feet of 15-inch drain pipe; service lateral connection re-instatement after new CIPP liner installation; full wrap service lateral connections; service lateral cutting of protruding laterals; manhole rehabilitation and lining; and root removal. The project also sewer bypass, permitting, traffic management and all other appurtenances, materials, equipment, and labor required to complete the project.

1.2 SCOPE OF WORK

- A. The Work shall consist of furnishing all labor, equipment, materials, tools, apparatus and all other incidental work required to complete the sewer system rehabilitation work as specified and shown in the figures provided in Appendices. The Work shall include, but not necessarily be limited to the following:
 - 1. Mobilization and demobilization to the Project Site.
 - 2. Furnishing, installation and maintenance of all traffic control and safety measures during the construction period, including signs, barricades, detours, maintenance of safe vehicular and pedestrian access to abutting properties, businesses and commercial establishments and assuring an uninterrupted supply of utility services to all public amenities, businesses and abutters within the project area, at all times. Coordinate the ordering of police officers as directed by the City and the Engineer.
 - 3. Coordination of all construction activities with the appropriate local and State Authorities, and utility companies. The Contractor is required to properly fill out the MWRA Toxic Reduction and Control Discharge Request questionnaire for CIPP work and submit on behalf of the City.
 - 4. Attending the Pre-construction conference and the required job progress meetings.
 - 5. Submission of a construction schedule, list of subcontractors, and proposed source locations for off-site materials prior to the start of work.
 - 6. Submission of all required shop drawings, in a timely manner, to the Engineer, for review.

7. Perform all field engineering associated with the project.
8. Providing site security (temporary fencing and jersey barriers) and other construction site control measures, as needed.
9. Protection and potential temporary removal of existing on-site structures, utilities and features.
10. On-site and laboratory testing, as specified.
11. Perform root removal by mechanical means. Root removal locations are noted in Appendix A. CCTV reports are included in Appendix B.
12. Cut protruding lateral connections flush with main line pipe. Refer to Appendix A for the locations of cutting work. CCTV reports are included in Appendix B.
13. The furnishing and installation of cured-in-place pipe (CIPP) as required for 8-inch sewer pipe and 15-inch drain pipe. Refer to Appendix A for the locations of the CIPP work. CCTV reports are included in Appendix B. Conduct a CCTV inspection before and after the CIPP pipe is installed.
14. Reinstate service laterals after CIPP main line liners have been installed. Refer to Appendix A for the service connection locations. CCTV reports are included in Appendix B.
15. The rehabilitation of manholes is required; including manhole cementitious lining, grouting for crack and leak sealing, brick and mortar repairs, and rebuilding benches and inverts.
16. Demolition and legal disposal of select concrete, debris, and appurtenances. Salvage of existing structures and items.
17. Maintenance and repair of all work for a period of one (1) year following the issuance of the Certificate of Substantial Completion.
18. The Work shall also conform to such additional Figures and addenda to these Specifications as may be published or exhibited prior to the opening of bid proposals and to such Figures in Appendix A in explanation of details, or as may be furnished by the Engineer from time to time during the construction.
19. Work, materials, equipment, and storage areas, which are necessary for construction, but which are not specifically referred to in the Specifications or shown on the Figures in Appendix A, but implied by the contract, shall be furnished by the Contractor at his own cost and expense, and shall be such as will correspond with the general character of the Work, as may be determined by the Engineer, whose decisions as to the necessity for and character of such work and materials shall be final and conclusive. It is the intent of these

Specifications to produce a complete, finished job, whether shown in every detail or not.

1.3 CONTRACTOR'S USE OF PREMISES

- A. There will be no storage of equipment or material in the City of Waltham's ROW.
- B. It is the responsibility of the Contractor to obtain a staging area at their own expense, the City of Waltham is not obligated to provide a staging area.
- C. Contractor shall assume full responsibility for security of all his/her and his/her subcontractors' materials and equipment.
- D. If directed by the Owner or Engineer, move any items which interfere with operations of Owner or other contractors.
- E. Obtain and pay for use of additional storage areas or work areas as necessary and required to perform the Work.

1.4 OWNER OCCUPANCY

- A. Owner will occupy premises during performance of the Work for the conduct of his/her normal operations. Coordinate all construction operations with Owner to minimize conflict and to facilitate Owner usage.
- B. A general description of the Work to be performed under this contract shall include, but will not be limited to, the following construction operations:
 - 1. Coordination of all construction activities with the appropriate local and State authorities and utilities.
 - 2. Attending the pre-construction conference and required job progress meetings.
 - 3. Submission of a construction schedule, list of subcontractors and submission of all required shop drawings, in a timely manner, to the Engineer for review.
 - 4. Mobilization to the site.
 - 5. Protection of existing structures and installation of environmental control measures.

1.5 UTILITIES

- A. The utilities shown on the plans have been located primarily from information furnished by others and are considered approximate both as to size and location. It shall be the Contractor's responsibility to locate all existing utilities and to protect same from damage or harm. All utilities interfered with or damaged shall be properly restored, at the expense of the Contractor, to the satisfaction of its Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01010

SECTION 01024

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 SUMMARY

- A. Under the price specified to be paid for each item, the Contractor shall furnish all materials and equipment, furnish all labor and plant and perform all operations to complete all work as indicated and specified. Provide all supervision, overhead items, bond and permit costs, protection and precautions and all other costs, incidental to the construction work, complete, and as specified, are also included.
- B. A complete, finished, working job, as intended by the general nature of these Specifications, shall be produced whether or not any particular wording or direction is omitted or inadvertently not clearly stated.
- C. Measurement for payment shall be by the Engineer, except where noted elsewhere in this Specification. Measurement for payment for lump sum items shall be on the basis of percentage of work complete and in place.
- D. Each unit or lump sum price stated in the Bid shall constitute full compensation as herein specified for each item of work completed in accordance with the Drawings and Specifications.
- E. Unit prices submitted for various items of work will be utilized for determining prices of any additional work necessary during construction.
- F. Final payment shall not be issued until the Contractor submits project record drawings approved by the Engineer.
- G. In accordance with Chapter 150 of the Acts of 2013 (An Act Relative to Price Adjustments for Certain Materials in Construction Projects), specifically Section 38A, of Massachusetts General Laws Chapter 30, the following materials will be eligible for price adjustments in accordance with the Appendices and applicable Specification Sections: fuel (both diesel and gasoline); liquid asphalt; and, portland cement (contained in cast-in-place concrete). The noted material price adjustments are applicable on a monthly basis only when the monthly cost change in base prices exceeds +/- 5%.

1.2 ITEM DESCRIPTIONS

- A. Item 1: Mobilization and Demobilization
 - 1. Measurement: Mobilization costs shall be on a lump sum basis but the cost shall not exceed 5% of the total of bid items **2 - 14** inclusive.

2. Payment. The lump sum price bid in the Bid Form for Item 1 shall be full compensation for all costs associated with initiation and closeout of the Contract, exclusive of the cost of materials, with 50% payable on completion of mobilization. Payment shall include compensation for all insurance, bonds, site preparation, construction equipment delivery, and in general the costs associated with establishing and terminating the work on site. There shall be no additional costs for any remobilization.

B. Item 2: Root Removal and Heavy Cleaning

1. Measurement for Item 2 shall be per the actual linear foot of sanitary and drain piping heavily cleaned for root removal, as directed and accepted by the Engineer. The length shall be measured from the inside face of the upstream manhole to the inside face of the downstream manhole or the pipe outlet.
2. Payment shall include furnishing all labor, tools, materials, and equipment necessary to satisfactorily remove roots, obstructions, and debris within sanitary sewer and drain piping by heavy cleaning. This item also includes providing standard and special jetting nozzles, chain cutter nozzles, robotic cutters, and any other equipment required to mechanically clean the pipe; hoses; water for construction; protection of property; restoration and clean-up; vactor of all pipe debris during cleaning and proper disposal of the debris; CCTV work; bypass piping (as required) and all other incidentals required to complete the work.
3. No chemical treatments will be allowed for removing roots.
4. The City of Waltham will not provide a disposal location for any debris removed from the sanitary and drain lines. The Contractor shall be responsible for the transportation and disposal of all debris. Disposal of debris shall be in accordance with all applicable local, state and federal regulations.

C. Item 3: Cured-in-Place-Pipe (CIPP)

1. Cured-in-place-pipe (CIPP) structural liner under Item 3a and 3b for 15" drain pipe and 8" sanitary sewer shall be measured per the actual linear foot of liner installed and accepted by the Engineer. The length shall be measured from inside face of the upstream manhole to inside face of the downstream manhole.
2. Payment for 15" drain and 8" sanitary sewer pipe, Items 3a and 3b, shall include furnishing all materials, tools, and equipment required to install the cured-in-place-pipe structural liner. These Items also include pre-lining cleaning and CCTV inspection; CIPP liner design; bypass pumping and blocking of flow; post-lining CCTV inspection, obtaining MWRA discharge

approval; pretreatment or proper disposal of curing water discharge as required by MWRA; testing; protection of property; restoration and clean-up; and all other incidentals required to complete the work.

3. CIPP lining installed but not warranty inspected via CCTV and accepted by the Engineer shall be paid for at a maximum of 90 percent of the unit prices bid under Item 3a and 3b of the proposal. The remaining 10 percent shall be paid upon receipt of CCTV videos and documentation, field testing completion and acceptance by the Engineer. All reductions in payment due to missing CCTV inspection, videos, and documents shall be made prior to normal retainage.

D. Item 4: Cut Protruding Service Connection

1. Measurement: Work under this item shall be measured per each protruding service connection and accepted by the engineer.
2. Payment: Under the Unit Price for Item 4, the Contractor shall furnish all labor, materials, tools, and equipment required to cut the protruding connection flush with the main line pipe wall, including, bypass pumping and blocking of flow as required, post cutting cleaning and CCTV Inspection, vactor of all debris and proper disposal of the debris, protection of property, site restoration and clean-up, and all other incidentals required to complete the work.

E. Item 5: Reinstate Service Connections

1. Measurement: Reinstatement of service connection shall be measured per connection reinstated and approved by the Engineer after review of the post-lining CCTV Inspection.
2. Payment: The Contract Unit Price per connection shall include all labor, materials, tools, equipment, and incidentals required to reinstate the service connections with a cutter to 95% of the original area and complete inspections.

F. Item 6: Service Lateral Connections (Full Wrap)

1. Measurement: Work under this item shall be measured per each insert installed and accepted by the Engineer. No payment shall be made for lateral connection repairs that are unsuccessfully installed.
2. Payment: Under the Unit Price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install a full main wrap lateral connection repair seal; including preparation of the lateral and removal of sharp edges, bypass pumping and blocking of flow as required, post-installation CCTV Inspection, testing, site restoration and clean-up, and all other incidentals required to complete the work.

3. Service lateral liners installed but not warranty inspected via CCTV and accepted by the Engineer shall be paid for at a maximum of 90 percent of the unit price. The remaining 10 percent shall be paid upon receipt of warranty period CCTV videos and documentation and acceptance by the Engineer.

G. Item 7: Manhole Grouting to Stop Leak

1. Measurement: Work under the appropriate item shall be measured per each manhole leak grouted as determined by the Engineer.
2. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to remove and dispose of loose material from leaks, drilling and sealing leaks with chemical grout, and all other incidentals required to complete the work.

H. Item 8: Lining of Manholes

1. Measurement: Work under the appropriate item shall be measured per vertical foot of manhole lined and accepted. Sewer and drain manhole lining shall be measured from the top of the manhole bench to the bottom of the manhole frame. Vertical feet lined shall be as measured by the Engineer.
2. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to line the manhole interior with 2-stage cement and epoxy, including surface preparation, root removal, replace and re-mortar loose or missing bricks, bypass pumping and blocking of flow, testing, and all other incidentals required to complete the work.

I. Item 9: Rebuild Manhole Invert Channel

1. Measurement: Work under the appropriate item shall be measured per each manhole bench and invert repaired as determined by the Engineer.
2. Payment: The Contract Unit Price for Manhole Repair shall include all labor, materials, tools, equipment, and incidentals required to rebuild the invert channel and seal with hydraulic cement, including surface preparation, root removal, replace and re-mortar loose or missing bricks, bypass pumping and blocking of flow, and all other incidentals required to complete the work.

J. Item 10: Clean and CCTV Inspection – 8” Sewer

1. Measurement: CCTV inspection shall be measured per the actual linear foot of inspection performed and accepted by the Engineer. The length shall be measured from inside face of the upstream manhole to inside face of the downstream manhole.

2. Payment: Under the Unit Price for the appropriate item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to perform the CCTV cleaning and CCTV inspection, vector of and proper disposal of debris, bypass pumping and blocking of flow as required, inspection report including digital copies, and all other incidentals required to complete the work.
3. The City of Waltham will not provide a disposal location for any debris removed from the sanitary and drain lines. The Contractor shall be responsible for the transportation and disposal of all debris. Disposal of debris shall be in accordance with all applicable local, state and federal regulations.

K. Item 11: Pre and Post Construction Flow Isolation/Estimation

1. Measurement: Work under this item shall be measured on a lump sum basis for flow isolation/estimation at the locations indicated in Specification Section 02427.
2. Payment: The Contract Unit Price for Pre and Post Flow Isolation shall include all labor, materials, tools, and equipment required to isolate and measure/estimate flow in manholes and manhole-to-manhole pipe segments, blocking of flow, traffic management, and all other incidentals required to complete the work, with 50% payable on completion of pre-construction flow isolation/estimation and delivery of the Infiltration Table included in Section 02427, and the final 50% payable on completion of the post-construction flow isolation/estimation and delivery of the Infiltration Table included in Section 02427.

L. Item 12: Police Officer Details

1. Payment shall be made at the stated allowance in the Bid Form. The police department will bill the Contractor directly and the Contractor shall pay the police department bills within a ten day working period for uniform police officers provided on the job site. The billing shall include a weekly statement outlining the days worked, hours worked, location of the work and rate for all officers providing service during that billing period. All bills must be signed by the Chief of Police or authorized representative.
2. The Contractor will be paid by the Owner for bills paid to the police department. The Contractor shall submit paid bills from the police department, stamped and signed as paid, to the Engineer, with the Contractor's Application for Payment. The billing shall include a weekly statement outlining the days worked, hours worked, location of the work and rate for all officers providing service during that billing period. **No mark-up is allowed on this Item.**
3. Uniformed officers required for purposes other than public safety and/or control of traffic shall not be eligible for payment.

4. Payment will not be made for improper notice of police detail cancellation as required by the Waltham Police Department.

M. Item 13: Traffic Management

1. Under the lump sum price bid for this Item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to provide, maintain, relocate, and remove Traffic Management and Control to areas directly or indirectly influenced by construction within the limits of work or outside the limits of work; along truck routes inside or outside the limits of work; as required by the MUTCD, ADA, and MHD standards; and as further directed by the Owner and Engineer. The work further includes, but is not limited to; obtaining permits; coordination with the City of Waltham Consolidated Public Works, Transportation Department, and Police and Fire Departments; coordination with private property owners within the limits of work; preparing, submitting, reviewing, implementing, and revising traffic management and control plans; furnishing, installing, relocating and removing construction signs; furnishing, installing, and maintaining traffic management devices based on approved traffic management and control plans including precast concrete barriers with fencing and plywood panels, reflectorized drums, lane delineators, portable barricades, temporary crosswalks, and cones; temporary pavement markings; removal of temporary and existing pavement markings; furnishing, installing, pinning, maintaining, and removing steel road plates; ordering and coordinating police details; furnishing and installing temporary construction fencing; maintaining roadways and sidewalks inside or outside the limits of work; establishing and dismantling detours; covering existing traffic signs; obtaining, posting and maintaining "No Parking" signs; meeting with police details; coordinating police detail locations; and all incidental work, whether listed here or not, required to provide maintenance and protection of traffic and pedestrians.
2. Measurement for payment for Traffic Management shall be on a percent of the Lump Sum bid calculated by dividing the elapsed time to date by the original Contractual construction time limit as approved by the Engineer.

N. Item 14: Miscellaneous Work

1. Under the Lump Sum price for this item, the Contractor shall provide general construction services and furnish other appurtenant items necessary to complete all other work identified within this contract, which is not included in Bid Items 1 through 13. This shall include, but is not limited to, the following:
 - a. Attending the pre-construction conference and all required job progress and community meetings, and coordination of all construction activities with the appropriate local authorities and utilities.

- b. Submission of all schedules, lists, laboratory test results, materials and sources, survey documentation, and shop drawings, as required, in a timely manner to the Engineer for review and approval.
 - c. Coordination of all construction activities with the Engineer, Owner, Regulatory Agencies, local utilities, and police. Obtaining necessary permits and licenses, and payment of associated fees, as required.
 - d. Providing a site-specific Health and Safety Plan for the Contractor's employees, in accordance with the minimum standards set forth in OSHA 29 CFR 1910.120. The Plan and Statement of Certification shall be submitted to the Engineer for their records prior to construction.
 - e. Implementation of the Health and Safety Plan.
 - f. Provide and maintain sanitary facilities during construction.
 - g. Maintenance and repair of all work for one (1) year period.
 - h. Construction, maintenance, and removal of equipment wash down area, as required.
 - i. Coordination of all construction activities with the City of Waltham.
 - j. All other project related direct and indirect costs not described above.
 - k. Contract closeout.
2. Payment for this lump sum Item shall be made based on the percentage of work completed, as determined by the Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01024

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SECTION 01046

CONTROL OF WORK

PART 1 – GENERAL

1.1 EQUIPMENT

- A. Furnish equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the Contract Time. If at any time such equipment appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he/she may order the Contractor to increase the efficiency, change the character or increase the plant equipment and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his/her obligations to secure the quality of the work and rate of progress required.

1.2 HOURS OF CONSTRUCTION

- A. Normal construction activity shall take place only between the hours of 7 a.m. to 4 p.m., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only on an emergency basis and only with the approval of the Owner and Engineer.
- B. River Street is a restricted work zone under City Ordinances. No work is allowed on River Street between the hours of 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.

1.3 PRIVATE LAND

- A. The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment any land outside the rights-of-way or property of the Owner.

1.4 HAULING, HANDLING, AND STORAGE OF MATERIALS

- A. The Contractor shall, at his own expense, handle, and haul all materials furnished by him and shall remove any and all of his surplus materials at the completion of the work. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by him that are liable to injury, and shall be responsible for any loss or damage to any equipment or materials by theft, breakage, or otherwise. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance, even though partial payments have been made under the Contract.

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1.5 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, fences, guardrails, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. The Contractor is required to comply with all provisions of General Laws Chapter 353, entitled "Excavations-Public Ways-Notice Requirements", otherwise known as DIGSAFE. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.
- B. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including, but not limited to existing water services, drain lines, sewers, and duct banks). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.
- C. Protection and temporary removal and replacement of existing utilities and structures, as described in this Section, shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit prices established in the Contract.
- D. If, in the opinion of the Engineer, permanent relocation of a utility owned by the Owner is required, which is not shown on the Plans or the Specifications, he may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for as extra work under Articles of the General Conditions. If relocation of a privately-owned utility is required, the Owner will notify the utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and utility, and shall have no claim for delay due to such relocation. The Contractor shall notify public utility companies, in writing, at least 72 hours (excluding Saturdays, Sundays, and legal holidays) before excavating in any public way.

1.6 PIPE LOCATIONS

- A. Pipelines shall be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him/her from laying and jointing different or additional items where required. Additional fittings ordered by the Owner or Engineer shall be paid for under the additional fittings bid item.

1.8 DIMENSIONS OF EXISTING STRUCTURES

- A. Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, the Contractor shall verify such

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dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

1.9 OPEN EXCAVATIONS

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. The Contractor shall, at his/her own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen or residents to their driveways. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.
- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.
- C. Contractor shall obtain proper trench and road opening permits as required by M.G.L C.82A and Title 520 of the CMR and the City of Waltham.

1.10 DUST CONTROL

- A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of water as necessary, so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use calcium chloride, and it is allowed by local authorities, for more effective dust control, the Contractor shall furnish and apply the material as directed.
- B. Calcium chloride shall be commercial grade, furnished in 100 lb, 5-ply bags, stored under weatherproof cover and stacked alternately for ventilation. Application for dust control shall be at the rate of about 1/2 pound per square yard, unless otherwise directed by the Engineer.
- C. Within buildings, the Contractor shall provide suitable materials and methods of dust control, containment, and clean up during construction. Methods, materials, and schedule shall be approved by the Engineer.

1.11 MAINTENANCE OF TRAFFIC

- A. Unless permission to close a street is received in writing from the proper authority, all excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he/she shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer.

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- B. Detours around construction will be subject to the approval of the Owner and the Engineer. Where detours are permitted the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured the Contractor shall expedite construction operations and periods when traffic is being detoured will be strictly controlled by the Owner.
- C. The Contractor shall take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.
- D. When, in the opinion of the Police Department, public safety requires the services of police, the Safety Officer may direct the Contractor to provide manpower to direct traffic within the location of work under this Contract.
- E. Under normal circumstances the Contractor shall coordinate the scheduling of all police activities. The Contractor shall make all arrangements in obtaining the manpower and all invoices for policing.
- F. The intent is to insure public safety by police direction of traffic. Police are not to serve as watchmen to protect the Contractor's equipment and materials, or to warn pedestrians of such hazards as open trenches.
- G. Nothing contained herein shall be construed as relieving the Contractor of any of his/her responsibilities for protection of persons and property under the terms of the Contract.
- H. Contractor shall furnish and maintain traffic control signage throughout the project and at all construction areas. Signs shall be standard signs in compliance with Massachusetts Highway standards. Signs shall be provided in accordance with the traffic management plans and specifications in the Contract Documents.
- I. It is the intent of this contract that traffic is maintained at all times in the areas of construction. The contractor may be required to halt operations and/or transport material to areas beyond immediate work locations in order to allow minimum traffic disruptions. Access to the site by emergency vehicles, school buses and residents shall be maintained at all times.
- J. The contractor shall be responsible for providing property owners with written notification of proposed construction which may require detours or road closures.

1.12 PROTECTION OF CONSTRUCTION AND EQUIPMENT

- A. All newly-constructed work shall be carefully protected from injury in any way. No placing of heavy loads on it shall be allowed, and all portions injured shall be reconstructed by the Contractor at its own expense.

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- B. All structures shall be protected in a manner approved by the Engineer. All such damaged portions of the work shall be completely repaired and made good by the Contractor, at his own expense, and to the satisfaction of the Engineer.
- C. If, in the final inspection of the work, any defects, faults, or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship, without extra compensation for the materials and labor required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction, and other work undertaken herein, for at least the guarantee period described in the Contract Documents.
- D. The Contractor shall take all necessary precautions to prevent damage to any work during and after construction, and until such work is accepted and taken over by the Owner.

1.13 CARE AND PROTECTION OF PROPERTY AND SURVEY MONUMENTS

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property, by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in another manner acceptable to the Engineer.
- B. Along the location of this work, all fences, walks, bushes, trees, shrubbery, and other physical features shall be protected and restored in a thoroughly workmanlike manner. Fences and other features removed by the Contractor shall be replaced in the location indicated on the Drawings as soon as conditions permit. All grass areas beyond the limits of construction, which have been damaged by the Contractor, shall be graded and seeded at the Contractor's expense.
- C. Trees close to the work shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are liable to damage because of his operations, but in no case shall any trees be cut or removed without prior notification of the Owner or other person in charge. All injuries to bark, trunk, limbs, and roots of trees shall be repaired by dressing, cutting, and painting according to approved methods using only approved tools and materials.
- D. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the Bid Proposal. The Contractor is responsible for protecting and, if required, re-setting survey monuments (bounds). If a bound is in the way of required excavation, the Contractor will notify the Engineer/Inspector and/or the town Engineering Division with as much notice as possible prior to performing excavation near the bound.

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1.14 REJECTED MATERIALS AND DEFECTIVE WORK

- A. Materials furnished by the Contractor and condemned by the Engineer as unsuitable or not in conformity with the Specifications shall forthwith be removed from the work by the Contractor, and shall not be made use of elsewhere in the work. Any errors, defects, or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor, and in a manner satisfactory to the Engineer. The Contractor shall reimburse the Owner for any expenses, losses, or damages incurred in consequence of any defect, error, omission, or act of the Contractor or his employees, as determined by the Engineer, occurring previous to the final payment.

1.15 COORDINATION WITH LOCAL AGENCIES

- A. The Contractor shall attend a Pre-Construction Meeting to be held at the City Engineer's Office, 119 School Street, Waltham, MA 02452 approximately one week prior to start of work. City departments who will also be invited to this meeting include Police, Fire, Planning, and Conservation. Electric, gas and phone utility companies will also be invited. The contractor will provide the proposed schedule at that time (see Submittals, Section 1300). Any proposed detours will be reviewed with all parties at the Pre-Construction Meeting. If any additional detours are considered after the Pre-Construction Meeting, the Contractor must first get approval from the Engineer.
- B. The Contractor will immediately notify the utility owner of any utility main breaks. The emergency contact number for the Engineering Department during business hours is 781-314-3855.
- C. The Contractor will be required to reimburse the Owner for the actual cost of the services of Department of Public Works required during other than regular working hours. This includes the cost of the Engineer/ Site Inspectors when inspection is required outside the normal business hours. This cost shall be at the rate of time and one-half of the Inspector's pay rate, to be paid to the Owner by the Contractor.
- D. The Contractor shall notify the Engineering Department at least 72 hours prior to the construction of any public improvement so that the Owner can have an inspector present if work requires inspection. In general, inspection will be required:
 - 1. When CCTV camera crews inspect sewer and drain;
 - 2. Root removal;
 - 3. CIPP lining main line pipe;
 - 4. Service connection cutting, reinstatement, and lining;
 - 5. Manhole rehabilitation; and
 - 6. During any testing conducted by the Contractor.

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- E. The Engineer will have the authority to reject any work or materials that do not constitute approval by the Owner and shall not relieve the Contractor of his obligations to perform the work in accordance with the Plans and Specifications.
- F. If applicable, the Contractor shall maintain pavement and shall provide the Owner with contact information at which he/she can be contacted when he/she is not at the site. Upon notification by the Owner or the Engineer the Contractor shall promptly make repairs to the construction site as may be necessary.
- G. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, curbing, electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him/her at his/her expense.
- H. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, gas lines and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.
- I. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the Total Price Bid in the Bid Form.
- J. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner.
- K. When applicable, in the opinion of the Engineer, permanent relocation of a utility owned by the Owner is required, he/she may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Article 11 of the Supplementary Conditions. If relocation of a privately owned utility is required, the Owner will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and the Utility and shall have no claim for delay due to such relocation. The Contractor shall notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays and Legal holidays) before excavating in any public way. Contractor shall also notify Massachusetts Dig Safe, telephone 811 at least 72 hours prior to start of work.

1.16 WATER FOR CONSTRUCTION PURPOSES

- A. The Contractor may be allowed to purchase water from the Owner for construction testing and start-up purposes.
- B. The express approval of the Waltham Water and Sewer Superintendent shall be

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obtained before water is used. Water shall be metered as specified by the Superintendent and shall only be operated under the supervision of the Superintendent.

- C. No direct cross connections will be permitted between the public water supply and the new water mains, or any other point where the possibility of backflow of contaminated water exists. All connections to points where there is the possibility of backflow shall be arranged to prevent backflow and shall be approved by the Superintendent's Inspector before they are put into operation.
- D. No separate measurement and payment shall be made for temporary water and all costs shall be incidental to and included with each applicable item.

1.17 MAINTENANCE OF FLOW

- A. The Contractor shall maintain the flow in all watercourses, whether open channels or in pipes, in all sewers and other pipes interfered with in the line of work and convey the flow to a suitable point of discharge so as not to flow upon the work or create a nuisance. In the discharge of water removed from the excavations by pumping or by gravity similar precautions shall be observed.

1.18 COOPERATION WITHIN THIS CONTRACT

- A. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and his/her Subcontractors or trades and shall assist in incorporating the work of other trades where necessary or required.
- B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

1.19 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

- A. During the course of the work, the Contractor shall keep the site of his/her operations in as clean and neat a condition as is possible. He/She shall dispose of all residues resulting from the construction work and, at the conclusion of the work, he/she shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and shall leave the entire site of the work in a neat and orderly condition.
- B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his/her subcontractors shall comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.

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- C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his/her own expense and restore the area impacted.
- D. Outdoor burning of rubbish and waste material on the site will not be permitted.
- E. Disposal of volatile fluid wastes (such as mineral spirits, oil, gasoline, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.
- F. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

1.20 PRECAUTIONS DURING ADVERSE WEATHER

- A. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.
- B. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

1.21 ACCESS TO THE WORK

- A. The Contractor shall provide sufficient and proper facilities at all times for inspection of all work under this project in preparation or in progress, by the Owner, the agents and employees of the Owner, by authorized representatives of the State of Massachusetts and the Federal Government and by the Engineers.
- B. The Contractor shall furnish the Engineer or his authorized representative and other personnel mentioned above with such facilities and assistance as are necessary to ascertain performance of the work in accordance with the plans and specifications.

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END OF SECTION 01046

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SECTION 01095

REFERENCE STANDARDS AND DEFINITIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.
- C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Engineer, requested by the Engineer, and similar phrases.
- D. Approve: The term approved, when used in conjunction with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- E. Regulation: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the work.
- F. Furnish: The term furnish means supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. Install: The term install describes operations at the project site, including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. Replace: The term replace means dismantle, remove, and dispose of existing equipment and materials and furnish and install new specified item.
- I. Provide: The term provide means to furnish and install, complete and ready for the intended use.

1. The term experienced, when used with the term Installer, means having a minimum of five previous projects similar in size and scope to this project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
 2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such a carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
- J. Project Site is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the project is to be built.
- K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- C. Conflicting Requirements: Where compliance with two or more standards is specified, and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Engineer for a decision before proceeding.
1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Engineer for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed, but not assured, to be accurate and up-to-date as of date of Contract Documents.

ACI	American Concrete Institute P.O. Box 19150 Detroit, Michigan 48219-0150 Telephone: (313) 532-2600
AI	Asphalt Institute Research Park Drive P.O. Box 14052 Lexington, Kentucky 40512-4052 Telephone: (606) 288-4960
ANSI	American National Standards Institute 11 West 42nd Street 13th Floor New York, New York 10036 Telephone: (212) 642-3300
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, Pennsylvania 19103 Telephone: (215) 299-5400
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, Colorado 80235 Telephone: (303) 794-7711
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park Street, N.E. Vienna, Virginia 22180 Telephone: (703) 281-6613

NAPA	National Asphalt Pavement Association 6811 Kenilworth Avenue Calvert Building Suite 620 Riverdale, Maryland 20737 Telephone: (301) 779-4880
NFPA	National Fire Protection Association One Batterymarch Park Quincy, MA 02169 Telephone: (617)- 770-3000
WSC	Water Systems Council 600 South Federal Street Suite 400 Chicago, Illinois 60605 Telephone: (312) 922-6222
NASSCO	National Association of Sewer Service Companies 2470 Longstone Lane, Suite M Marriottsville, MD 21104 Telephone: 410-442-7473

- F. Federal Government Agencies: Names and titles of Federal Government standard- or specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard- or specification-producing agencies of the Federal Government. Names and addresses are subject to change and are believed, but not assured, to be accurate and up-to-date as of the date of the Contract Documents.

CFR	Code of Federal Regulations (available from the Government Printing Office) North Capitol Street between G and H Streets, N.W. Washington, D.C. 20402 Telephone: (202) 783-3238
EPA	(Material is usually first published in the "Federal Register") Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460 Telephone: (202) 382-2090
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Gaithersburg, Maryland 20899 Telephone: (301) 975-2000

OSHA Occupational Safety and Health Administration
 (U.S. Department of Labor)
 Government Printing Office
 Washington, D.C. 20402
 Telephone: (202) 523-6091

1.4 GOVERNING REGULATIONS AND AUTHORITIES

- A. The Engineer has contacted authorities having jurisdiction where necessary to obtain information to prepare Contract Documents. Contact authorities having jurisdiction directly for information and decisions regarding the work.

 Waltham Engineering Department
 City Engineer: Stephen Casazza, P.E.
 Telephone: 781-314-3830

1.5 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, warranties, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01095

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SECTION 01110

ENVIRONMENTAL PROTECTION MEASURES

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this Section consists of furnishing all labor, materials and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents 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 noise and solid waste, as well as other pollutants.
- C. The CONTRACTOR shall take sufficient precautions during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens and calcium chloride into the supplies and surface waters of the State.
- D. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.
- E. These Specifications are intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the CONTRACTOR's responsibility to determine the specific construction techniques to meet these guidelines.
- F. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Massachusetts Department of Environmental Protection.
- G. The CONTRACTOR is responsible for preparing and submitting all applicable regulatory construction permits required to perform the work.

- H. CONTRACTOR shall be responsible for maintenance of the erosion control structures and devices, and replacing as needed to maintain the required protection and performance.
- I. Schedule and conduct all work in a manner that will minimize the level of noise escaping the site, especially at night and on weekends.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections, apply to this section.

1.3 APPLICABLE REGULATIONS

- B. Comply with all applicable Federal, State and local laws, regulations, and orders of conditions concerning environmental pollution control and abatement.

1.4 NOTIFICATIONS

- A. The ENGINEER will 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 shall notify the CONTRACTOR in writing, through the ENGINEER, of any non-compliance with State or local requirements. The CONTRACTOR shall, after receipt of such notice from the ENGINEER or from the regulatory agency through the ENGINEER, 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 OWNER 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.

1.5 IMPLEMENTATION

- A. Prior to commencement of the work, meet with the ENGINEER to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.
- B. Remove temporary environmental control features, when approved by the ENGINEER, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 – PRODUCTS

2.1 EROSION CONTROLS

- A. Filter sock to be used for run-off control to protect adjacent wetlands and other environmentally protected areas.
- B. Non-woven Filter Fabric or Silt Sacks to be used where inserted into existing catch basins to prevent siltation of the existing drainage system, as necessary.
- C. Where silt fence is required, provide the following woven geotextile fabric for silt fence:
 - 1. Amoco 2122 as manufactured by Amoco Fabrics and Fibers Co., Atlanta, GA.
 - 2. Mirafi 100X as manufactured by Mirafi, Pendergrass, GA.
 - 3. Geotex 910SC as manufactured by Synthetic Industry, Chattanooga, TN.
 - 4. Or acceptable equivalent product.

2.2 MATERIALS

- A. Physical Properties of Minimum Average Roll of the woven geotextile fabric for silt fence shall be:
- B.

	Property	ASTM Test Method	Units	Value
1.	Grab Strength	D4632	lbs [N]	100 [450](min.)
2.	Permissivity	D4491	sec - 1	0.10 (min.)
3.	Apparent Opening Size	D4751	Sieve #	20-30
4.	Ultraviolet Stability	D4355	%	70 (min.)

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install sedimentation barriers in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the ENGINEER.
- B. Install all erosion controls and environmental protection measures in accordance with manufacturer's printed instructions.

- C. Overlap silt fence 18 inches minimum for unsewn lap joint. Overlap fabric 6 inches at seam for sewn joint.
- D. Construct earth berms or diversions to intercept and divert runoff water from critical areas.
- E. Protect catch basins and drainage swales from sedimentation by installing inlet protection under catch basin grating casting as shown on the Drawings.
- F. Do not place excavated soil material adjacent to water-course in manner that will cause it to wash away by high water or runoff.
- G. Prevent damage to vegetation by excessive watering or silt accumulation in the discharge area.
- H. Do not dump spoiled material into any streams, wetlands, surface waters, or unspecified locations.
- I. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands or surface waters.
- J. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto.
- K. Prevent damage to vegetation adjacent to or outside of construction area limits.
- L. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.
- M. Do not alter flow line of any stream unless indicated or specified.
- N. Clean and dispose of debris from sedimentation barriers on a weekly basis.
- O. Upon completion of work and upon approval of ENGINEER, remove and legally dispose of sedimentation barriers and environmental protection measures.

3.2 PROTECTION OF WETLANDS RESOURCE AREAS

- A. Care shall be taken to prevent or reduce to a minimum any disturbance to the adjacent wetlands, drainage ditch, surface water body, storm drain or sewer from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the receiving body shall not be directly returned to the surface water

body. Such water will be diverted through a settling basin or filter before being directed into the surface water body.

- B. The CONTRACTOR shall not discharge water from dewatering operations directly into a wetland, surface water, or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels. All dewatering discharges shall also include energy dissipation to prevent scouring.
- C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action drawing or plan approved by the Massachusetts Department of Environmental Protection. CONTRACTOR shall submit two copies (2) of approved contingency drawings or plans to the ENGINEER.
- D. Equipment refueling operations must take place in a supervised area outside of any well zone 1 radius with appropriate secondary containment measures in place and spill response materials accessible on-site for the duration of construction.

3.3 PROVISIONS FOR CONTROL OF EROSION

- A. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented.
- B. Disposal of drainage shall be in an area approved by the OWNER. The CONTRACTOR shall prevent the flow or seepage of drainage back into the drainage area. Drainage shall not be disposed of until silt and other sedimentary materials have been removed. Particular care shall be taken to prevent the discharge of unsuitable drainage to a water supply or surface water body.
- C. As a minimum, the following shall apply:
 - 1. Silt fence shall be provided at points where drainage from the work site may contain polluting substances. The point of control shall be within the limits of the new construction and shall be contained in such a way as to not allow sediment to pass. Other methods which reduce the sediment content to an equal or greater degree may be used as approved by the ENGINEER.
 - 2. Drainage leaving the site shall flow to water courses in such a manner to prevent erosion.
- D. Measures for control of erosion must be adequate to assure that turbidity in the receiving water will not be increased more than 10 standard turbidity units (s.t.u.), or

as otherwise required by the State or other controlling body, in waters used for public water supply or fish unless limits have been established for the particular water. In surface water used for other purposes, the turbidity must not exceed 25 s.t.u. unless otherwise permitted.

3.4 PROTECTION OF STREAMS

- A. Care shall be taken to prevent, or reduce to a minimum, any damage to any stream from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Such waters will be diverted through a settling basin or filter before being directed into the streams.
- B. The CONTRACTOR shall not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.
- C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Massachusetts Department of Environmental Protection.

3.5 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 construction, that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.
- B. Outside of areas requiring earthwork for the construction of the new facilities, the CONTRACTOR shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the ENGINEER. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The CONTRACTOR shall in any event be responsible for any damage resulting from such use.
- C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the CONTRACTOR's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.

- D. Any trees or other landscape feature scarred or damaged by the CONTRACTOR's equipment or operations shall be restored as nearly as possible to its original condition. The ENGINEER will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.
- E. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
- F. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the CONTRACTOR and are beyond saving in the opinion of the ENGINEER, shall be immediately removed and replaced.
- G. The locations of the CONTRACTOR's storage, and other construction buildings, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the ENGINEER and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the ENGINEER.
- H. If the CONTRACTOR proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he/she shall submit the following for approval at least ten days prior to scheduled start of such temporary work.
 - 1. A layout of all temporary roads, excavations and embankments to be constructed within the work area.
 - 2. Details of temporary road construction.
 - 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
 - 4. A landscaping drawing showing the proposed restoration of the area. Removal of any trees and shrubs outside the limits of existing clearing area shall be indicated. The drawing shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the CONTRACTOR's approved drawings shall be made only with the written approval of the ENGINEER. No

unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.

- I. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the ENGINEER. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as approved by the ENGINEER.
- J. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.6 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. The CONTRACTOR will be required to maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.
- C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the ENGINEER.
- D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the CONTRACTOR must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the ENGINEER.

3.7 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.8 NOISE CONTROL

- A. The CONTRACTOR shall make every effort to minimize noises caused by his/her operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with State and Federal regulations.
- B. CONTRACTOR should note local residences within proximately of the work and shall make all efforts to minimize noise disruptions.
- C. Construction activities and operating equipment shall not begin before 7:00 A.M.

END OF SECTION 01110

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SECTION 01170

SPECIAL PROVISIONS

PART 1 – GENERAL

1.1 GENERAL OBLIGATIONS OF THE CONTRACTOR

- A. General obligations of the CONTRACTOR shall be as set forth in the Contract Documents. Unless special payment is specifically provided in the payment paragraphs of the specifications, all incidental work and expense in connection with the completion of work under the Contract will be considered a subsidiary obligation of the CONTRACTOR and all such costs shall be included in the appropriate items in the Bid Form in connection with which the costs are incurred.

1.2 SEQUENCE OF WORK

- A. Construction Sequence. CCTV inspection, root removal, and cutting protruding lateral connections shall be completed in each pipe segment prior to the installation of CIPP liners.
- B. CIPP liners shall be installed before any manhole rehabilitation work in adjacent manholes.

1.3 SITE INVESTIGATION

- A. The CONTRACTOR shall satisfy himself/herself as to the conditions existing within the project area, the type of equipment required to perform the work, the character, quality and quantity of the subsurface materials to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Drawings and Specifications. Any failure of the CONTRACTOR to acquaint himself/herself with the available information will not relieve him/her from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The OWNER assumes no responsibility for any conclusions or interpretation made by the CONTRACTOR on the basis of the information made available by the OWNER.

1.4 CONTRACTOR'S EMERGENCY CONTACT AND RESPONSE REQUIREMENT

- A. The CONTRACTOR will be required to designate a contact person as well as an emergency response crew who can be notified by the OWNER and the ENGINEER during Contract related emergencies, 7 days a week, 24 hours a day throughout the length of this Contract.
- B. The name of the designated person, a daytime contact telephone number, an evening contact telephone number, and a portable cellular telephone number must be furnished to the OWNER at the pre-construction meeting. The CONTRACTOR must also provide a mobile cellular telephone that will remain at the construction site

during the hours of construction. The phone will be in a location that will allow the CONTRACTOR to respond to calls as well as the OWNER or ENGINEER.

- C. The contact person shall be required to respond to any City of Waltham notification in this regard within one hour of such notice by calling (781) 314-3855 during normal working hours or the Waltham Police Department (781) 314-3600 after hours. Upon being advised by the City of the location and nature of the emergency, the Contractor will be required to provide an emergency coordinator or contact at the site within one hour of the initial notification and to mobilize the necessary response crew(s) and have them at the site of the emergency within two hours of the initial notification.
- D. The CONTRACTOR's failure to comply with the above notification and response requirements shall result in a one thousand dollar (\$1,000.00) fine for each failure to respond as indicted in 1.3.C. In addition the CONTRACTOR shall be liable for any and all damages, liabilities and costs which result from his/her failure to respond to any emergency within the designated time periods. The OWNER assumes no responsibility or costs for the CONTRACTOR's negligence in complying with these requirements. If the subject fine or other liabilities are not paid by the CONTRACTOR upon request, it shall be deducted from any payment(s) which may be due the CONTRACTOR by the OWNER, solely at the discretion of the OWNER.
- E. The Contractor shall not use any OWNER personnel to fulfill these requirements.
- F. This requirement shall be considered an incidental part of the Contract, no matter how many times the CONTRACTOR is alerted during this Contract, and no payment will be made for any costs incurred or associated with the emergency contact and response requirements.

1.5 PUBLIC UTILITIES

- A. The CONTRACTOR shall comply with the requirements of the Commonwealth of Massachusetts Statute - Chapter 82, Section 40, for excavations in public and private property. Compliance shall include the following:
 - 1. The CONTRACTOR shall notify public utility companies in writing at least 72 hours **and the General Foreman of Waltham Water & Sewer at 781-314-3826** (excluding Saturdays, Sundays and legal holidays) but not more than 30 days before excavating in areas where underground utility plant (pipes, cables, manholes, etc.) exist.
 - 2. The CONTRACTOR shall be responsible for providing the Utility Companies with a schedule of his/her activities in areas where the utilities exist.
 - 3. The CONTRACTOR shall immediately notify utility companies of any damage to their utilities resulting from construction operations.

4. The express approval of the OWNER shall be obtained before public water is used. Hydrants shall only be operated under the supervision of the OWNER's personnel. The water is to be metered. A meter must be obtained by the Water Department. The CONTRACTOR will be responsible for all associated fees and charges for water use.
- B. The CONTRACTOR shall notify DIGSAFE at 811 or 888-DIG-SAFE at least 72 hours before digging, trenching, blasting, demolishing, boring, backfilling, grading, landscaping or other earth moving operations in any public ways, rights of way and easements.

1.6 PERMITS

- A. The CONTRACTOR shall be required to obtain all necessary permits for proper execution of certain phases of the project. The CONTRACTOR shall fill out all forms and furnish all drawings required to obtain the permits. A copy of the approved permit shall be submitted to the ENGINEER. All fees associated with these permits shall be paid by the CONTRACTOR as part of the project. Work shall not commence on any phase of the work requiring a permit until the permit is obtained. Permits required for this project include but are not limited to MWRA discharge permits for CIPP liner wastewater discharge as follows:
 1. The discharge of wastewater from the installation of a CIPP liner, as part of a sewer rehabilitation project, into the Municipal or MWRA (Authority) sewerage system is prohibited, unless authorized by the Authority. Wastewater discharged from the CIPP liner installation into a pipeline must comply with MWRA Sewer Use Regulations 360 CMR 10.021-10.024, prior to mixing with any other streams. Authorization to discharge wastewater from the CIPP liner installation into a pipeline shall be obtained from the Authority at least thirty (30) calendar days prior to beginning the discharge. To obtain the "MWRA Request To Discharge From A CIPP Liner Into A Pipeline" form, please contact Katia Thomas, Project Manager - Permitting, MWRA Toxic Reduction and Control, 2 Griffin Way, Chelsea, MA 02150 or kattia.thomas@mwra.com.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01170

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SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 COORDINATION WITH THE OWNER

- A. As part of this Contract, the CONTRACTOR shall coordinate his activities with the OWNER. In addition, the CONTRACTOR will give the OWNER significant notice on any work that may be required to meet the contract schedule.

1.3 PRE-BID CONFERENCE

- A. Prior to the opening of the bids, a site conference shall be held with prospective bidders. All Contractors are urged to attend. Refer to Invitation to Bid.

1.4 PRECONSTRUCTION CONFERENCE

- A. A preconstruction conference will be held between the CONTRACTOR, the ENGINEER, the OWNER, and applicable agency representatives to review the Contractor's proposed methods of complying with the requirements of the Contract Documents.
- B. CONTRACTOR will be notified of the time, date and place where the preconstruction conference will be held.

1.5 PROGRESS MEETINGS WITH ENGINEER

- A. In addition to other regular project meetings for other purposes (as indicated elsewhere in the Contract Documents), hold general progress meetings twice each month with times and place coordinated between CONTRACTOR's superintendent and ENGINEER. Meeting dates shall be established by the ENGINEER. Require every entity then involved in the planning, coordination or performance of work to be properly represented at each meeting. Include (when applicable) consultants, separate contractors (if any), principal subcontractors, suppliers/manufacturers/fabricators, governing authorities, insurers, special supervisory personnel and others with an interest or expertise in the progress of the work. Review each entity's present and future needs including interface requirements, time, sequence, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, submittals, change orders, and

documentation of information for payment requests. Discuss whether each element of current work is ahead of schedule. Determine how behind-time work will be expedited and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within the Contract Time. Review everything of significance which could affect the progress of the work.

- B. Within seven days after each progress meeting date, the Engineer will forward copies of the minutes-of-the-meeting, to the Contractor.
- C. Immediately following each progress meeting where revisions to the Progress Schedule/Critical Path Schedule have been made or recognized (regardless of whether agreed to by each entity represented), revise the Schedule. Reissue revised Schedule within 10 days after meeting. At intervals matching the preparation of payment requests, revise and reissue the Schedule to show actual progress of the work in relation to the latest revision of the Schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01200

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 DESCRIPTION OF REQUIREMENTS

- A. This section specifies the general methods and requirements of submissions applicable to the following work-related submittals.

1. Shop Drawings.
2. Product Data.
3. Samples.
4. Construction Photographs
5. Construction or Submittal Schedules.
6. Or Equal submittals.

- B. Additional general submission requirements are contained in the General Conditions.

- C. Detailed submittal requirements will be specified in the technical specifications section.

1.3 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

- A. Shop Drawings:

1. Shop drawings, as defined in the General Conditions, and as specified in individual work sections include, but are not necessarily limited to: custom-prepared data such as fabrication and erection/installation (working) drawings of concrete reinforcement, structural details and piping layout, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications as applicable to the work.
2. All shop and working drawings shall be prepared on standard size, 22-in. by 34-in. sheets, except those which are made by changing existing standard shop or working drawings.

3. All shop drawings shall be submitted using a transmittal form approved by the ENGINEER. Submittal form shall include identification of transmittal number and specification section number.
4. All shop drawings submitted by Subcontractors for review shall be sent directly to the CONTRACTOR for approval. The CONTRACTOR shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
5. The CONTRACTOR shall check all Subcontractor's shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the Subcontractors for correction before submission thereof.
6. All details on shop drawings submitted for approval shall show clearly the relation of the various parts of the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements. Such measurements shall be made and noted on the drawings before being submitted for approval.

B. Product Data:

1. Product data as specified in individual sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and printed installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances including certificates of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications and recommended spare-parts listing, and printed product warranties, as applicable to the Work.

C. Samples:

1. Samples specified in individual sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the ENGINEER or OWNER for independent inspection and testing, as applicable to the Work.

1.4 CONTRACTOR'S RESPONSIBILITIES

- A. The CONTRACTOR shall review shop drawings, product data and samples, including those by Subcontractors, prior to submission to determine and verify the following:

1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance with the Specifications.
- B. Each shop drawing, sample, and product data submitted by the CONTRACTOR shall have affixed to it the following Certification Statement including the CONTRACTOR's Company name and signed by the CONTRACTOR: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in. X 17-in. and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the ENGINEER a copy of each submittal transmittal form for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the ENGINEER.
1. Submittals received "WITHOUT" Certification Statement shall not be reviewed.
- C. If a shop drawing shows any deviation from the requirements of the Contract Documents, the CONTRACTOR shall make specific mention of the deviations in the Transmittal Form furnished by the ENGINEER and provide a description of the deviations in a letter attached to the submittal.
- D. The review and approval of shop drawings, samples or product data by the ENGINEER shall not relieve the CONTRACTOR from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the CONTRACTOR and the ENGINEER will not have responsibility therefore.
- E. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the CONTRACTOR's risk. The OWNER will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- F. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.
1. Manufacturer's printed installation instructions; a part of product data submitted to the ENGINEER will not be reviewed and are for informational purposes only.

1.5 "OR EQUAL"

- A. Should the CONTRACTOR seek approval of a product other than the brand or brands named in these specifications, it shall furnish written evidence that such product conforms in all respects to the specified requirements, and that it has been used successfully elsewhere under similar conditions. Where the specified requirements involve conformance to recognized codes or standards the CONTRACTOR shall furnish evidence of such conformance in the form of test or inspection reports, prepared by a recognized agency, and bearing an authorized signature.
- B. Manufacturers' standard data and catalog cut sheets will not be considered sufficient in themselves, and the ENGINEER will not be responsible for seeking further data from the manufacturer, or for otherwise researching the product. Failure to provide complete data will be cause for rejection of the product.
- C. The CONTRACTOR shall be responsible for all additional costs including license fees, structural/foundation, piping, instrumentation, and electrical work necessary to accommodate the proposed "or equal" equipment. Items which result in a cost reduction shall be presented and a change order reflecting 65% of the cost savings will be prepared and the contract price modified.

1.6 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other CONTRACTOR.
- B. All complete submittals shall be submitted sufficiently in advance of construction requirements to provide no less than twenty-five (25) days, excluding Saturdays, Sundays and legal holidays for review from the time received at the ENGINEER's reviewing office. For submittals of major equipment, that require more than twenty-five (25) days to review, due to its sheer complexity and amount of detail and also requiring review by more than one engineering discipline, a letter will be sent by the Project Manager or his/her designee to the CONTRACTOR informing him/her of the circumstances and the date it is expected the submittal will be returned to the CONTRACTOR.
- C. Number of submittals required:
 - 1. Shop Drawings: Unless otherwise stated in the respective Specifications Sections, submit six (6) copies.
 - 2. Product Data: Unless otherwise stated in the respective Specifications submit six (6) copies.
 - 3. Samples: Submit the number stated in the respective Specification Sections.
- D. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.

2. The Project title and number.
 3. CONTRACTOR identification.
 4. The names of:
 - a. CONTRACTOR
 - b. Supplier
 - c. Manufacturer
 5. Identification of the product, with the specification section number, page and paragraph(s).
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the Work or materials.
 8. Applicable standards, such as ASTM, Mass Highway, or Federal Specification numbers.
 9. Identification of deviations from Contract Documents.
 10. Identification of revisions on resubmittals.
 11. An 8-in. x 3-in. blank space for CONTRACTOR and ENGINEER stamps.
- E. Each shipment of drawings shall be accompanied by a transmittal form furnished by the ENGINEER giving a list of the drawing numbers and the names mentioned above.

1.7 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

- A. The ENGINEER's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the CONTRACTOR from compliance with the contract plans and specifications or from departures there from. The CONTRACTOR remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- B. The review of shop drawings, data, and samples will be general. They shall not be construed:
 1. as permitting any departure from the Contract requirements;

2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, and materials;
 3. as approving departures from details furnished by the ENGINEER, except as otherwise provided herein.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which the ENGINEER finds to be in the interest of the OWNER and to be so minor as not to involve a change in Contract Price or time for performance, the ENGINEER may return the reviewed drawings without noting an exception.
- D. Two (maximum) copies of shop drawings or product data will be returned to the CONTRACTOR. Samples will not be returned.
- E. Submittals will be returned to the CONTRACTOR under one of the following codes.
- Code 1 "NO EXCEPTION TAKEN" is assigned when there are no notations or comments on the submittal. When returned under this code the CONTRACTOR may release the equipment and/or material for manufacture.
- Code 2 "MAKE CORRECTIONS AS NOTED" is assigned when a confirmation of the notations and comments IS NOT required by the CONTRACTOR. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
- Code 3 "SUBMIT SPECIFIED ITEM" is assigned when a confirmation of the notations and comments IS required by the CONTRACTOR. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the ENGINEER within 10 calendar days of the date of the ENGINEER's transmittal requiring the confirmation.
- Code 4 "REVISE AND RESUBMIT" is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the ENGINEER within 10 calendar days of the date of the ENGINEER's transmittal requiring the resubmittal.
- Code 5 "REJECTED" is assigned when the submittal does not meet the intent of the Contract Documents. The CONTRACTOR must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.
- F. Resubmittals will be handled in the same manner as first submittals. On resubmittals the CONTRACTOR shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the ENGINEER, on previous

submissions. Any such revisions which are not clearly identified shall be made at the risk of the CONTRACTOR. The CONTRACTOR shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the ENGINEER.

- G. Partial submittals may not be reviewed. The ENGINEER will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the CONTRACTOR, and will be considered "Rejected" until resubmitted. The ENGINEER may at his option provide a list or mark the submittal directing the CONTRACTOR to the areas that are incomplete.
- H. If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the CONTRACTOR shall give written notice thereof to the ENGINEER at least seven working days prior to release for manufacture.
- I. When the shop drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the ENGINEER.

1.8 GENERAL PROCEDURES FOR SUBMITTALS

- A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval resubmittal (if required), coordination with other submittals, inspection, testing (off-site and on-site), purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the CONTRACTOR's failure to transmit submittals sufficiently in advance of the Work.

1.9 CERTIFICATION FORMS

- A. If specifically specified in other sections and appendices of these Specifications, the CONTRACTOR shall submit the applicable certification form(s) for each item required, and if applicable, the form attached to this section, completely filled in and stamped.

1.10 CERTIFICATES OF COMPLIANCE

- A. Certificates of Compliance specified in the specifications shall include and mean certificates, manufacturer's certificates, certifications, compliance reporting forms, certified copies, letters of certification and certificate of materials.
- B. The CONTRACTOR shall be responsible for providing Certificates of Compliance requested and specified in Division 0, Division 1, and the technical specifications. Certificates are required for demonstrating proof of compliance with specification requirements and shall be executed in 6 copies unless otherwise specified/approved.

Each certificate shall be signed by an official authorized to certify on behalf of the CONTRACTOR, Subcontractor, or manufacturing company (as appropriate), and shall contain the individual's name and title, address of the Supplier, the project name and location, and if applicable, the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the CONTRACTOR, Subcontractor, or Supplier from providing additional means of verification or from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.11 DISTRIBUTION

- A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the ENGINEER. Number of copies shall be as directed by the ENGINEER but shall not exceed 6.

1.12 RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change orders and other modifications to the Contract
 - 5. Reviewed shop drawings, Product Data, and Samples
 - 6. Manufacturer's instruction for assembly, installation, and adjusting
- B. Record information concurrent with construction progress, not less than weekly. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.

3. Changes made by Addenda and modifications.
- B. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured horizontal and vertical locations of underground utilities and appurtenances, including fire hydrants, gate valves, and service boxes, referenced to permanent surface structures.
 2. Field changes of dimension and detail.
 3. Details not on original Contract drawings.

1.13 SCHEDULES

- A. Provide all schedules required by the General Conditions.
- B. The CONTRACTOR shall submit a progress schedule before starting any work, in accordance with the General Conditions. The CONTRACTOR shall review the progress schedule with the ENGINEER periodically. Such review shall be made on a monthly basis or more frequently as required by the ENGINEER. The progress schedule shall be updated as required by the ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01300

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by (Name of CONTRACTOR)

_____ to design
_____ in accordance with
Specification Section _____ for the replacement of the water main. The undersigned
further certifies that he/she has performed the design of the
_____, that said design is in
conformance with all applicable local, state and federal codes, rules, and regulations, and that
his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and
resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to
the OWNER or the OWNER's representative with seven days following written request therefor
by the OWNER.

P.E. Name

Signature

Address

CONTRACTOR's Name

Signature

Title

Address

CHANGE ORDER FORM

For
IDDE Work Package 2017
City of Waltham, MA

Date: _____

Change Order No.: _____

To: _____

The terms and conditions of the original Contract for this project shall govern this change.

Description of Change:

Total Amount of this Change Order: \$ _____

Original Contract Price: \$ _____

Adjusted Contract Price due to Previous Change Orders: \$ _____

The New Contract Price due to this Change Order will be: \$ _____

Change to Contract Time: _____ days

RECOMMENDED BY: _____

Title

ACCEPTED BY: _____

Title

ACCEPTED BY: _____

City of Waltham

Title

IDDE Work Package 2017
City of Waltham
253-1401

SUBMITTALS
01300-11

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SECTION 01311

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.
- B. Section 01170 – Special Provisions

1.2 SUMMARY

- A. Prepare and submit to Engineer for review projected construction schedules. Update and revise schedules periodically to reflect progress of work.

1.3 FORM OF SCHEDULES

- A. Prepare in form of network analysis system using the Critical Path Method.
- B. Perform data preparation, analysis, charting and updating in accordance with pertinent recommendations contained in current edition of "CPM in Construction" manual of the Associated General Contractors.
- C. The network analysis system shall consist of a detailed network, mathematical analysis and a network diagram.
 - 1. The network diagram shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned by the Contractor. The basic concept of a network analysis diagram will be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of following activities.
 - 2. Detailed network activities shown on the network diagram shall include, in addition to environmental protection and construction activities, the submittal for approval of samples and shop drawings, the procurement of critical materials and equipment and their installation and testing.
 - 3. Related activities shall be grouped on the network. The activities on the critical paths shall be highlighted. The network shall be time scaled using units of approximately one-half inch equals one week or other suitable scale approved by the Engineer. Weekends and holidays shall be indicated. Where slack exists, the activities shall be shown at the earliest time they are scheduled to be accomplished. Sheet size shall be 22" x 34" minimum.

4. The mathematical analysis of the network diagram shall include a tabulation of each activity shown on the detailed network diagram. The following information shall be furnished as a minimum for each activity.
 - a. Preceding and following event numbers.
 - b. Activity description.
 - c. Estimated duration of activities in units of working days (being the best estimate available at time of computation).
 - d. Earliest start date (by calendar date).
 - e. Earliest finish date (by calendar date).
 - f. Scheduled or actual start date (by calendar date).
 - g. Scheduled or actual finish date (by calendar date).
 - h. Latest start date (by calendar date).
 - i. Latest finish date (by calendar date).
 - j. Slack or float.
 - k. Monetary value of activity.
 - l. Responsibility for activity (Prime Contractor, subcontractors, suppliers).
 - m. Manpower required by trade and by total. Graphic representatives will be allowed.
 - n. Equipment required.
5. The mathematical analysis shall list the activities in sorts or groups as follows:
 - a. By the preceding event number from lowest to highest and then in the order of the following event number.
 - b. By the amount of slack, then in order of activity number.
 - c. By responsibility in order of earliest start date.

1.4 REVIEW OF SYSTEM

- A. Participate in a review and evaluation of the proposed network diagrams and analysis by the Engineer. Revisions necessary as a result of this review shall be resubmitted to the Engineer within 10 days after the conference. Twenty days will be allowed for checking and further action by the Engineer. Progress payments will be withheld pending attainment of a mutually acceptable schedule. The mutually acceptable schedule shall then be the schedule to be used by the Contractor for planning, organizing, directing and executing the Work and for reporting progress. If the Contractor thereafter desires to make changes in his method of operating and scheduling he shall notify the Engineer in writing stating the reasons for the change. If the Engineer considers these changes to be of a major nature he may require the Contractor to revise and submit, without additional cost to the Owner, all of the affected portion of the network diagram and mathematical analysis to show the effect on the entire project. A change may be considered of a major nature if the time estimated to be required or actually used for an activity or the logic of sequence of activities is varied from the original plan to a degree that there is reasonable doubt as to the effect on the Contract completion date or dates. Changes which effect activities with adequate slack time shall be considered as minor changes, except that an

accumulation of minor changes may be considered as a major change when their cumulative effect might affect the Contract completion date.

1.5 UPDATES

- A. Submit at intervals of 30 days a report of the actual construction progress by updating the mathematical analysis. All contract changes, including pending and approved change orders and field orders shall be included in the update schedule. Revisions causing changes in the detailed network shall be noted on the network or a revised issue of the affected portions of the detailed network furnished. The network shall be revised as necessary for the sake of clarity.
- B. The report shall show the activities or portions of activities completed during the reporting period and their total value as basis for the Contractor's periodic request for payment. Coordinate with the schedule of breakdown of lump sum items. The report shall state the percentage of the Work actually completed and schedule as of the report date and the progress along the critical path in terms of days ahead or behind the allowable dates. If the project is behind schedule, progress along other paths with negative slack shall be reported. Percentage of work actually completed will be reviewed by the Engineer. If the Contractor fails to submit the required monthly reports and updates within the time prescribed, the Engineer may withhold approval of progress payment estimates until such time as the Contractor submits the required reports and updates. Three copies of the report shall be submitted for each update.
- C. Simultaneously submit a narrative report with the updated analysis which shall include but not be limited to a description of the problem areas, current and anticipated delaying factors, their impact, and an explanation of corrective actions taken or proposed.

1.6 SUBMITTALS

- A. Within 15 days after execution of the AGREEMENT, submit 3 copies of a preliminary schedule indicating planned operations during first 60 days. Include cost of activities expected to be completed before submission and approval of the complete schedule.
- B. Within 30 days after execution of the AGREEMENT, submit 3 copies of the complete network analysis system. After review, submit 3 copies of the mutually acceptable system.
- C. Submit 3 copies of monthly reports and updates by the tenth day of the month.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01311

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SECTION 01350

HEALTH AND SAFETY PLAN

PART 1 - GENERAL

1.1 SUMMARY

- A. The CONTRACTOR shall, prior to the start of work on the site, prepare and submit for review, a site-specific health and safety plan. Work may not proceed at the project site until the OWNER and/or ENGINEER have reviewed and approved the CONTRACTOR's health and safety plan. Any delays incurred by the CONTRACTOR relating to reviews of the health and safety plan shall be the responsibility of the CONTRACTOR and constitute no additional costs or claims to the OWNER.
- B. Individuals involved in the excavation of potentially impacted soils shall be properly informed and trained in the recognition and response strategies involved with the hazards posed by these contaminants. The excavation of contaminated soils areas is not anticipated. However, the CONTRACTOR shall provide appropriate equipment (e.g., temporary fencing, drums) in the event hazardous materials are spilled or encountered.
- C. The CONTRACTOR shall be cognizant of the minimum standards set forth in OSHA 29 CFR 1910.120. The health and safety plan shall include, but not be limited to the following:
 - 1. Identification of CONTRACTOR's Site Safety Officer.
 - 2. Identification of CONTRACTOR's Designated Field Personnel.
 - 3. Type of Medical Surveillance Program.
 - 4. Identification of Hazard and Risks Associated with Project.
 - 5. CONTRACTOR's Standard Operating Procedures including Personnel Training and Field Orientation; Personal Hygiene Requirements & Guidelines; Field Monitoring Requirements of Site Contaminants; Respiratory Protection Training & Requirements; Levels of Protection and Selection of Equipment Procedures; Zone Delineation of the Project Site; Site Security and Entry Control Procedures; Contingency and Emergency Procedures; and Listing of Emergency Contacts.
 - 6. The CONTRACTOR must be aware of site specific requirements such as site security during non-working hours, limited work space, and minimizing the effects of soil excavation to adjacent structures.
 - 7. The CONTRACTOR shall make available complete sets of personal protective equipment and clothing to the OWNER and ENGINEER for use during site

inspections by the OWNER and ENGINEER. These shall be supplied and maintained at no cost to the OWNER, and shall be returned to the CONTRACTOR upon completion of the Work, except for expendable disposal protective clothing. CONTRACTOR shall provide a repository for collection of disposable health and safety materials. Collection and disposal of contaminated expendable supplies shall be at cost to the CONTRACTOR.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01350

SECTION 01400

QUALITY ASSURANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This section covers Quality Assurance and Control requirements for this contract.
- B. The CONTRACTOR is responsible for controlling the quality of work, including work of its subcontractors, filed sub-bidders, and suppliers and for assuring the quality specified in the Technical Specifications is achieved.
- C. Refer to GENERAL CONDITIONS.

1.3 TESTING LABORATORY SERVICES

- A. All tests which require the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the ENGINEER. The laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.
- B. Preliminary Testing Services: Unless otherwise specified, the CONTRACTOR shall be responsible for all testing laboratory services in connection with concrete materials and mix designs, the design of asphalt mixtures, gradation tests for structural fills, embankment fills, backfill materials, and all other tests and engineering data required for the ENGINEER's review of materials and equipment proposed to be used in the Work. The CONTRACTOR shall obtain the ENGINEER's acceptance of the testing laboratory before having services performed, and shall pay all costs for services.
- C. Quality Control Testing Services: Perform all quality control tests in the field or in the laboratory on asphalt mixtures, moisture-density (Proctor) and gradation tests on structural and embankment fills, and backfill materials, in-place field density tests on structural and embankment fills, and other materials and equipment, during and after their incorporation in the Work. Field sampling and testing shall be performed in the general manner indicated in the specifications, with minimum interference with construction operations. The ENGINEER shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing as necessary to determine that materials and equipment conform with data previously furnished by CONTRACTOR and with the Contract Documents.

- D. Arrangements for delivery of samples and test specimens to the testing laboratory will be made by the CONTRACTOR. The laboratory tests shall be performed within a reasonable time consistent with the specified standards. Furnish a written report of each test to the ENGINEER.
- E. Contractor shall furnish all sample materials and cooperate in the sampling and field testing activities, interrupting the Work when necessary. When sampling or testing activities are performed in the field, the CONTRACTOR shall furnish personnel and facilities to assist in the activities.
- F. The CONTRACTOR shall not retain any testing laboratory against which the OWNER or the ENGINEER have reasonable objection, and if at any time during the construction process the services become unacceptable to the Owner, or the ENGINEER, either the OWNER or the ENGINEER may direct in writing that such services be terminated. The request must be supported with evidence of improper testing or unreasonable delay. If the ENGINEER determines that sufficient cause exists, the CONTRACTOR shall terminate the services and engage a different testing laboratory.
- G. Transmittal of Test Reports: Written reports of testing and engineering data furnished by the CONTRACTOR for the ENGINEER's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings.
- H. The testing laboratory shall furnish four copies of a written report of each test performed by laboratory personnel in the field or laboratory to the CONTRACTOR. Distribution shall be two copies of each test report to the ENGINEER, one copy to the Owner, and one copy for the CONTRACTOR within three days after each test is completed.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Refer to General Conditions.
- B. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the CONTRACTOR for superintendence and quality control of the work, the CONTRACTOR shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the CONTRACTOR's personnel, subcontractors, and ENGINEER.
- C. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications, and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. Material and equipment shall not be used by the CONTRACTOR for any purpose other than that intended or specified unless such use is authorized by the ENGINEER.

- D. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

1.5 OFFSITE INSPECTION

- A. When the specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by an independent testing laboratory, or inspection organization acceptable to ENGINEER in conjunction with or by the ENGINEER.
- B. The CONTRACTOR shall give appropriate written notice to the ENGINEER not less than 30 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.
- C. The inspection organization shall submit a written report to the CONTRACTOR who shall provide copies to the ENGINEER.

1.6 MATERIALS AND EQUIPMENT

- A. The CONTRACTOR shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.
- B. The CONTRACTOR shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur where the contract documents are more stringent than the manufacturer's printed instructions, the CONTRACTOR shall comply with the specifications. In cases where the manufacturer's printed instructions are more stringent than the contract documents, the CONTRACTOR shall advise the ENGINEER of the disparity and conform to the manufacturer's printed instructions. In either case, the CONTRACTOR is to apply the more stringent specification or recommendation, unless approved otherwise by the ENGINEER.

1.7 SHOP AND FIELD TESTING

- A. The CONTRACTOR is also responsible for providing the shop and field testing specified in the technical specification sections.
- B. The CONTRACTOR and its Subcontractor shall perform inspections, tests, and other services as required by the Contract Documents.
- C. Contractor shall provide twenty one (21) days' notice to the ENGINEER so that the ENGINEER may witness CONTRACTOR and/or Subcontractors off site and on site tests. The ENGINEER's witnessing of tests does not relieve the CONTRACTOR and/or Subcontractors of their obligation to comply with the requirements of the Contract Documents.

1.8 MANUFACTURER'S FIELD SERVICES

- A. When specified in the technical specifications sections, the CONTRACTOR shall arrange for and provide technical representation from manufacturer's of respective equipment, items or components. The manufacturer's representative shall be a factory trained service ENGINEER/technician with the type and length of experience specified in the technical specifications.
- B. Services Furnished Under This Contract: An experienced, competent, and authorized factory trained service engineer/technician representative of the manufacturer of each item of equipment for which field services are indicated in the specifications shall visit the site of the Work and inspect, operate, test, check, adjust if necessary, and approve the equipment installation. In each case, the manufacturer's service representative shall be present when the equipment is placed in operation. The manufacturer's service representative shall revisit the jobsite as often as necessary until all problems are corrected and the equipment installation and operation are satisfactory to the ENGINEER.

1.9 CERTIFICATION FORMS AND CERTIFICATES

- A. The CONTRACTOR shall be responsible for submitting the certification forms and certificates in conformance with the requirements specified in Section 01300 - Submittal Procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 QUALITY CONTROL

- A. Quality control is the responsibility of the CONTRACTOR, and the CONTRACTOR shall maintain control over construction and installation processes to assure compliance with specified requirements.
- B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, cable splicing, instrument calibration, surveying) shall be maintained in the CONTRACTOR's field office, available for inspection by the ENGINEER. Copies will be made available to the ENGINEER upon request.
- C. Means and methods of construction and installation processes are the responsibility of the CONTRACTOR, and at no time is it the intent of the ENGINEER or OWNER to supersede or void that responsibility.

END OF SECTION 01400

SECTION 01500

TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 TEMPORARY UTILITIES

- A. Temporary Light and Power: The Contractor shall at his own expense, provide his own temporary light and power as required for the prosecution and completion of work.
- B. Temporary Heat: The Contractor shall, at his own expense, provide sufficient temporary heat to maintain a minimum temperature of 50 degrees F at all times in all areas that may be designated elsewhere in these documents.
- C. Temporary Telephone: The Contractor shall have installed at his own expense a job telephone for his use. The Contractor shall pay all phone charges.
- D. Sanitary Provisions: The Contractor shall provide and maintain sanitary accommodations for the use of his employees, as may be necessary to comply with the requirements and regulations of the local and state departments of health.
- E. Maintaining Operation of the Existing Facilities:
 - 1. The Contractor shall be responsible for careful consideration of the construction, scheduling and anticipation of potential interference with existing utilities, operations and structures. The Contractor shall maintain close communications with the Engineer and provide the Engineer with a detailed description of each proposed activity sufficiently in advance of its commencement for review and comments to be made.
 - 2. Temporary facilities which may be required include, but are not limited to, electrical power; lighting; heating; cooling; ventilating; telephone; potable water; fire protection; drainage; sanitary facilities; trench covers; protection of existing utilities; structures; streams; trees and shrubs; access roads; sewage conveyance; piping.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01500

SECTION 01610

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.3 TRANSPORTATION AND DELIVERY

- A. Transport and handle items in accordance with manufacturer's printed instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.
- C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- F. Provide equipment and personnel to unload all items delivered to the site.
- G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by

others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

1.4 STORAGE AND PROTECTION

- A. Store and protect products in accordance with the manufacturer's printed instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer by him. Instructions shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.
- B. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.
- C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in manner to reduce breakage, cracking and spalling to a minimum.
- D. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere (even though covered by canvas) shall be stored in a weathertight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Engineer. Building shall be provided with ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01610

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Closeout procedures
 - 2. Record Documents
 - 3. Final cleaning
 - 4. Adjusting.

1.3 RELATED WORK

- A. Cleaning up requirements are included in Section 01710.

1.4 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for ENGINEER's inspection.
- B. Provide submittals to ENGINEER that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payment, and sum remaining due.
- D. Submit all warranties.
- E. Submit written notice that all subcontractors and suppliers have been paid in full.
- F. Submit written notice showing the disposition of all insurance filings and claims.
- G. Copy of "Statement of Compliance" filed with the Division of Labor and Workforce Development, as required under the State Wage Rate Provisions.

1.5 RECORD DOCUMENTS

- A. Maintain on site, one set of the following documents; actual revisions to the Work shall be recorded in these documents:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change orders and other Modifications to the Contract
 - 5. Reviewed shop drawings, product data, and samples
 - 6. Written interpretations and clarifications
 - 7. Field orders
 - 8. Field test reports properly verified
 - 9. Upon completion of the project Record Drawings shall be submitted to the ENGINEER.
- B. Store As-built Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name, address and telephone number and product model and serial number
 - 2. Product substitutions or alternates utilized
 - 3. Changes made by Addenda and Modifications.
- E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical location of excavation limits referenced to permanent surface bounds
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work
4. Field changes of dimension of detail
5. Details not on original Contract Drawings.

1.6 FINAL CLEANING

- A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 1. Remove labels that are not permanent labels.
 2. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean.
 3. Wipe surface of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 4. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

1.7 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01700

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SECTION 01710

CLEANING UP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. During its progress, the work and the adjacent areas affected thereby shall be cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the CONTRACTOR's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.
- C. On or before the completion of the work, the CONTRACTOR shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- D. The CONTRACTOR shall thoroughly clean all materials and equipment installed by him and his sub-contractors, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be left fully charged with lubricant and ready for operation.
- E. The CONTRACTOR shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the CONTRACTOR shall do as required all necessary driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as

promptly as practicable as work progresses and shall not be left until the end of the contract period.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01710

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

1.3 RELATED WORK

- A. Refer to General Conditions of the Contract for the general requirements relating to warranties and bonds.
- B. General closeout requirements are included in Section 01700 - Contract Closeout.
- C. Specific requirements for warranties for the Work and products and installations that are specified to be under warranty are included in the individual Sections of Division 2, inclusive.
- D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

1.4 SUBMITTALS

- A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement data for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.
- B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within fifteen days of completion of that designated portion of the Work.
- C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document

that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Engineer for approval prior to final execution.

- D. Refer to individual Sections of Divisions 2 for specific content requirements, and particular requirements for submittal of special warranties.
- E. At Final Completion, compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the "Warranties and Bonds" binder.
- F. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-in. by 11-in. paper.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the "Warranties and Bonds" binder, with each item identified with the number and title of the specification Section in which specified, and the name of the product or work item.
- H. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer, supplier, and manufacturer.
- I. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name, address, and telephone numbers of the Contractor and equipment supplier.
- J. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.5 WARRANTY REQUIREMENT

- A. Related Damages and Losses: When correcting Work under warranty that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of Work under warranty.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding; reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements

of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.
- E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- F. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.6 DEFINITION

- A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION 01740

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DIVISION 2
SITE CONSTRUCTION
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SECTION 02427

PRE AND POST CONSTRUCTION FLOW ISOLATION AND ESTIMATION

PART 1 - GENERAL

1.1 WORK INCLUDED

This Section covers all materials, equipment, and labor required to conduct flow isolation on individual sewer reaches.

1.2 RELATED WORK

A. Section 01300 – SUBMITTALS

1.3 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

- A. The CONTRACTOR shall enter the appropriate information in the attached table to record each flow isolation/estimation reading pre-construction and post-construction. Any observed infiltration from manholes shall be noted in the table and shall not be included in the measured manhole-to-manhole value. Submit form to the ENGINEER.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 FLOW ISOLATION AND ESTIMATION

- A. Prior to beginning any infiltration work and following the completion of all rehabilitation work, flow isolation shall be conducted by the CONTRACTOR on all sewer reaches that are rehabilitated during the project. Readings shall be recorded one manhole-to-manhole segment at a time, unless otherwise required by the ENGINEER.
- B. Prior to beginning any rehabilitation work and following the completion of all rehabilitation work on manholes, the CONTRACTOR shall estimate the infiltration from each manhole to be rehabilitated.
- C. Individual manhole to manhole sewer segments shall be flow isolated by plugging flow at the upstream manhole and taking weir measurements at the downstream manhole using portable, pre-calibrated weirs.
- D. Flow isolation shall be performed between the hours of 12:00 AM and 6:00 AM during periods of high ground water and dry weather. The ENGINEER will determine if the groundwater and weather conditions are appropriate to conduct flow isolation. If the conditions are not appropriate, the ENGINEER may require that flow isolation be completed as part of the warranty inspection process.

END OF SECTION 02427

Infiltration Table (GPM)

Enter Date: _____

Location	Upstream Manhole	Manhole Infiltration	Downstream Manhole	Manhole Infiltration	Pipe Infiltration
Upton Rd	SMH R46_24310		SMH R46_24305A		
Upton Rd	SMH R46_24305A		SMH R46_24300		
Beal Rd	SMH R63_12155		N/A	N/A	N/A
Canterbury Rd / Candace Ave	SMH R53_12340		SMH R53_12335		
Pierce St	SMH R61_09015		SMH R61_09010		
Fuller St	SMH R77_02570		SMH R77_02565		
Fuller St	SMH R77_02565		SMH R77_02555		
Fuller St	SMH R77_02560		SMH R77_02555		

SECTION 02435

MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 WORK INCLUDED:

- A. This Section covers the rehabilitation of sewer and drain manholes as called for herein and on the Drawings. It is the intent of this specification to provide for the waterproofing, sealing, and structural enhancement of existing manholes by chemical grout exterior sealing of sewer manhole inverts, walls and corbels; and by application of a uniform cementitious layer of high-quality mortar. An additional corrosion resistant monolithic high-build epoxy lining system shall be installed in addition to the cementitious liner. Additional manhole rehabilitation related items include manhole root removal and build manhole bench and invert.
- B. The work shall include: elimination of infiltration by external chemical grout sealing; removal and patching of loose and/or unsound material; cleaning and preparation of surfaces; repair of invert, bench, and walls; chemical grout sealing of the invert, bench, walls, and pipe connections; and application of a cementitious mix and epoxy system to form a liner. Other repairs shall be completed as indicated on the Drawings and described herein.
- C. The Contractor shall furnish all equipment, material and labor required to perform all manhole rehabilitations described in this specification.
- D. External grouting of inverts, bench, walls, corbel, and pipe connections shall be performed prior to application of liner system.

1.2 RELATED WORK:

- A Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

- 1. Section 02538 – Temporary By-Pass Sewage Pumping

1.3 QUALITY ASSURANCE:

- A. The Work described herein shall be performed by a company with not less than five (5) years of experience in providing the required services, employing experienced workers and experienced supervisory personnel. Supervisory personnel shall have not less than three (3) years of experience in providing the required services and shall be present at

the jobsite during all work related to the required services.

1.4 REFERENCES:

- A. The following standards form a part of this specification as referenced:

The National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (Current Edition).

ASTM F2551	Standard Practice for Installing a Protective Cementitious Liner System in Sanitary Sewer Manholes
ASTM C94	Ready-Mix Concrete
ASTM C109	Comprehensive Strength
ASTM C267	Chemical Resistance
ASTM C596	Shrinkage
ASTM C666, Method A	Freeze/Thaw Resistance
ASTM D4414	Standard Practice for Measurement of Wet Film Thickness for Organic Coatings
ASTM 543	Resistance of Plastics to Chemical Reagents
ASTM 638	Tensile Properties of Plastic
ASTM 695	Comprehensive Properties of Rigid Plastics
ASTM D790	Flexural Properties of Unreinforced and Reinforced Plastics

1.5 LINING SYSTEM DESCRIPTION:

- A. Unless otherwise indicated herein, sewer manhole sealing shall be carried out in accordance with the current edition of PERFORMANCE SPECIFICATION GUIDELINE FOR MANHOLE REHABILITATION, of NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.
- B. The Contractor may propose alternative processes and/or products for review and approval by the Engineer.
- C. The locations of the manhole lining work to be completed are as shown on the Drawings.

1.6 SUBMITTALS:

- A. Prior to beginning the work, submit six (6) sets of the following:
- Qualifications of the firm/personnel who will perform the Work.
 - Provide at least five (5) references of different projects in which at least 50 manholes have been rehabilitated by the firm within the past three (3) years.
 - Description of the system, equipment and material with MSDS proposed for sewer manhole rehabilitation.

- d. Description of the system proposed for bypass pumping during the procedures to be carried out.
- e. Manufacturer's warranty

1.7 WARRANTY:

- A. The manhole rehabilitation work performed shall be warrantied against infiltration and faulty workmanship and materials for a period of one (1) year after the project is accepted by the Owner.

PART 2 - PRODUCTS

2.1 REHABILITATION MATERIALS:

All products used for lining, sealing, patching, and cleaning shall be environmentally safe. The contractor shall submit MSDS Data Sheets for all materials used.

2.2 SEALING OF INVERT, STOPPING ACTIVE LEAKS AND EXTERIOR CHEMICAL SEALING:

The contractor shall use a chemical grout that is environmentally safe for the sealing of sewers. The chemical grout shall be in accordance with CHEMICAL SEALING (GROUTING) MATERIALS of the NASSCO Standard Specifications.

2.3 PATCHING MIX:

A quick-setting cementitious material shall be used as a patching mix and is to be mixed and applied according to the manufacturer's recommendation and shall have the following minimum requirements.

Compressive Strength	ASTM C-109	6 hr 1,400 psi
Shrinkage	ASTM C-596	0% AT 90% Relative Humidity

2.4 INFILTRATION CONTROL MIX:

A rapid-setting cementitious product specifically for leak control shall be used to stop water infiltration and shall be mixed and applied according to the manufacturer's recommendations and shall have the following minimum requirements.

Compressive Strength	ASTM C-109	1 hr 600
psi Compressive Strength	ASTM C-109	24 hr 1,800
psi		

2.5 CEMENTITIOUS LINER MIX:

- A. The cementitious liner mix shall be used to form a structural enhancing monolithic liner covering all interior manhole surfaces and shall have the following minimum requirements at 28 days:

Compressive Strength	ASTM C-109	6,000 psi
Shrinkage	ASTM C-596	0%, 90% humidity
Freeze/Thaw Resistance	ASTM C-666	No visible damage after 100 cycles

- B. The liner mix shall be applied in one monolithic layer.

2.6 CORROSION PROTECTIVE COATING (EPOXY LINER)

- A. The corrosion protective coating shall be a 100% solids, solvent-free two-component epoxy resin system thixotropic in nature and filled with select fillers to minimize permeability and provide sag resistance acceptable to the following specifications:

Volatile Organic Compounds (vol %)	ASTM D2584	0%
Flexural Strength	ASTM D790	13,000 psi
Compressive Strength	ASTM D695	18,000 psi
Tensile Strength	ASTM D638	7,600 psi
Tensile Elongation	ASTM D638	1.50 %
Hardness, Type D	ASTM D2240	88
Adhesion	ASTM D4541	>Tensile Strength of Concrete (substrate failure)
Chemical Resistance	(ASTM D543)	Sulfuric Acid, 10% Immersion Service

2.6 BRICK MATERIALS:

- A. Brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Bricks shall comply with ASTM C32. Grade SS shall be used for inverts and shelves, and Grade MS shall be used for applications other than inverts and shelves. Rejected brick shall be immediately removed from the work and brick satisfactory to the Engineer substituted.
- B. Concrete Masonry Units: Concrete masonry units shall be made from hydraulic cement, water, and suitable mineral aggregates, and conform to ASTM C139.
- C. Mortar shall be composed of Portland cement, hydrated lime, and sand in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. Mortar for Grade SS Brick shall be mixed in the volume proportions of 1:1/2:4-1/2; Portland cement to hydrated lime to sand.

- D. Cement shall be Type II Portland cement as specified for concrete masonry.
- E. Hydrated lime shall be Type S conforming to ASTM C207.
- F. Sand shall comply with ASTM C144 specifications for "Fine Aggregate," except that all of the sand shall pass a No. 8 sieve.

2.7 CONCRETE:

- A. Cement shall be domestic Portland cement conforming to ASTM C150, Type II.
- B. Fine aggregate shall be washed natural sand conforming to ASTM C33.
- C. Coarse aggregate shall be well graded crushed stone conforming to ASTM C33, size No. 67.
- D. No admixtures shall be used unless approved by the Engineer in writing.

2.8 WATER:

Water used in mixing shall be potable.

2.9 DELIVERY, STORAGE, AND HANDLING:

- A. Materials shall be delivered to the site in the Manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. All materials shall be stored properly and in accordance with Manufacturer's instructions.

PART 3 - EXECUTION

3.1 SAMPLING AND TESTING OF LINER:

- A. The Owner reserves the right to test all materials.
- B. Products that fail to meet the requirements of these specifications shall not be incorporated in the work.

3.2 SURFACE PROTECTION:

- A. During progress of work, where appearance is important, adjacent areas or grounds which may be permanently discolored, stained, or otherwise damaged by dust and rebound, shall be adequately protected and, if contacted, shall be cleaned by early scraping, brushing or washing, as the surroundings permit.

- B. No street markings shall be removed or covered throughout the progress of work.

3.3 EXISTING FLOWS:

The Contractor shall divert flows as required for the work and in accordance with the requirements specified in Section 02538 - TEMPORARY BY-PASS SEWAGE PUMPING.

3.4 CEMENTITIOUS LINING:

A. PREPARATION

1. Remove all foreign material from the manhole wall and bench using a high-pressure water spray (minimum 5,000 psi). Loose and protruding brick, mortar, and concrete shall be removed using a mason's hammer and chisel and/or scraper. Fill any large voids with quick-setting patching mix. Surfaces to be repaired shall be clean and free of loose materials. Additional surface preparation shall be as recommended by the manufacturer of the materials to be applied.
2. Leaks shall be stopped using a chemical grout, which shall be applied as per the manufacturer's recommendations. Leaks may require weep holes drilled at the manhole base to localize the infiltration during the application, after which the weep holes shall be sealed with a chemical grout and plugged with the quick-setting infiltration control mix prior to the final liner application. Areas with evidence of previous leakage (e.g., mineral deposits) shall also be grouted.
3. All pipe connections in brick manholes shall be grouted regardless of whether they are leaking or have signs of previous leakage. Grout ports shall be located near the pipe connections to ensure that the sealing material is injected at the manhole/pipe connections. Grout ports shall be located and drilled in the bench and invert for all brick manholes as necessary to seal the manhole base.

B. INVERT SEALING

1. The Contractor shall carry out all work as described in SEWER MANHOLE SEALING 3 (3.1) of the NASSCO Standard Specifications using sealing materials and procedures accepted by the Engineer. Grout ports shall be located in the invert and base of the manhole. The Contractor shall also ensure that sealing material is injected at the manhole/pipe connections. A quick setting patch mix shall be troweled uniformly not to exceed 1/2-inch, onto the damaged invert extended out onto the base of the manhole sufficiently to tie into the structurally enhanced monolithic liner to be applied. The finished inverts shall create a smooth transition between the manhole invert and cured-in-place liner. Application of the quick setting patch mix will not be required in manholes that will have a cured-in-place liner through the invert. The locations are as indicated on the plans.

C. INTERIOR SEALING

1. Interior lining of the manholes shall be conducted only after all other manhole rehabilitations have been completed.
2. Unless otherwise indicated herein, the Contractor shall carry out all work as described in SEWER MANHOLE REHABILITATION, CEMENTITIOUS LINER, of the NASSCO Standard Specifications using lining materials and procedures accepted by the Engineer.
3. Preparation, as described in the above referenced NASSCO specification, shall be completed prior to the placement of the cementitious liner.
4. Sealant shall not be placed on a frozen surface or during freezing weather. Sealant shall not be placed when it is anticipated that the temperature during the following 24 hours will drop below 32 degrees, Fahrenheit.
5. Pipes and/or service connections shall be temporarily plugged prior to the application of the cementitious manhole interior liner. A flash coat of the liner material shall be applied three (3) inches into each service connection. Temporary plugs shall be removed once the liner has cured sufficiently to prevent erosion of the new liner.
6. Thickness shall be verified with a wet gauge at random points of the new interior surfaces as required by the Engineer. Minimum thickness of one-half (1/2) inch is required.
7. Application shall be with low velocity, continuous flow equipment to prevent the adverse effects of rebound. A smooth trowel finish shall be applied.
8. The Contractor shall prohibit debris from entering the invert by either covering the invert or plugging during application.

D. DIGITAL PHOTOGRAPHS

1. The Contractor shall take a digital photograph of the interior of each manhole, before and after rehabilitation, in JPEG format. Filenames shall contain manhole designations. Digital photographs shall have a minimum resolution of ten (10) megapixels.

3.5 CORROSION PROTECTIVE COATING

- A. Installation of the corrosion protective coating shall not commence until the cementitious liner material has properly cured and been prepared in accordance with manufacturer recommendations.
- B. The specified corrosion protective coating shall be applied utilizing manufacturer approved heated plural component spray equipment. The protective coating shall be

applied in two coats to achieve 125-250 mil average thickness. The second coat of the protective coating should occur as soon as the basecoat becomes tack free, ideally within 12 hours but no later than the recoat window for the specified product. Additional surface preparation procedures are required if this recoat window is exceeded.

3.6 REPAIR MANHOLE CORBEL, INVERT AND BENCH:

- A. Existing manhole bench and invert (including debris, brick, block, and mortar) shall be removed and disposed of.
- B. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
- C. Each brick shall be laid as a header in a full bed and joint of mortar without requiring subsequent grouting, flushing or filling, and shall be thoroughly bonded as required.
- D. Channels and shelves shall be constructed of brick and concrete as shown on the Drawings. The brick lined channels shall correspond in shape with the lower half of the pipe. The top of the shelf shall be set at the elevation of the crown of the highest pipe and shall be sloped 1 inch per foot to drain toward the flow through channel. Brick surfaces exposed to sewage flow shall be constructed with a nominal 2-inch by 8-inch face exposed (i.e. bricks on edge).

3.7 MANHOLE GROUTING TO STOP LEAKS:

- A. The Contractor shall drill grout ports at all leaks. Chemical sealing material shall be pumped through the grout ports to seal the exterior of the manhole. Areas with evidence of previous leakage (e.g., mineral deposits) shall also be grouted. Grout ports shall be plugged with the quick-setting infiltration control mix following completing of grout installation.
- B. The Contractor shall prohibit debris from entering the invert by either covering the invert.
- C. The chemical sealing material used shall be as described in chemical sealing (grouting) materials of the NASSCO Standards Specification.
- D. The Contractor shall be aware of the potentially close proximity of grout ports to underdrain piping. The Contractor shall take care in making sure grout is not pumped into the underdrain during this process.

3.8 FIELD TESTING/INSPECTION:

- A. Material Testing: One 2 x 2 inch sample cube shall be taken for every 50 bags of cementitious lining material used. Samples shall be sprayed from the nozzle of the application equipment, identified and sent to an independent test laboratory for compression strength testing as described in ASTM C109.

- B. Thickness Testing: During application of the corrosion protective coating a wet film thickness gage, such as those available through Paul N. Gardner Company, Inc. meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used to ensure a monolithic coating and uniform thickness during application.
- C. Holiday Testing: After the protective coating has set hard to the touch it shall be inspected with high-voltage holiday detection equipment. Surfaces shall first be dried, an induced holiday shall then be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99). All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional protective coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the protective coating manufacturer's recommendations.
- D. Bond Strength: Measurement of bond strength of the protective coating to the substrate shall be made at regular intervals and along different sections of the structure. Bond strength shall be measured in accordance with ASTM D4541. Any areas detected to have inadequate bond strength shall be evaluated by the Project Engineer. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by Applicator in strict accordance with manufacturer's recommendations.
- E. Prior to the expiration of the warranty period, the Contractor shall inspect each of the sewer manholes rehabilitated during this project in accordance with SEWER MANHOLE SEALING of the NASSCO Standard Specifications at a time where groundwater is sufficiently high as determined by the Engineer. The Contractor shall repair any defects found, there shall be no leaks and no evidence of previous leakage.
- F. All inspecting, testing, and reworking within the warranty period shall be provided at no additional cost to the Owner.

END OF SECTION

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SECTION 02440

PIPELINE CLEANING AND INSPECTION

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

- A. Clean and inspect the pipelines indicated on the Drawings or as directed by the ENGINEER in a manner that is compliant with the guidelines set forth within this section. This Work includes furnishing all equipment and labor required to perform the services described herein.

1.2 QUALITY ASSURANCE

- A. Refer to Section 01400 – QUALITY ASSURANCE, for qualification requirements.

1.3 REFERENCES:

- A. The following standard is referenced as part of this specification:

The National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (Current Edition).

1.4 SUBMITTALS

- A. Submit detailed television inspection reports as specified herein. Submit inspection reports and DVD video record for review and approval by ENGINEER weekly, minimum.
- B. DVD shall provide a visual and audio record of conditions encountered in the pipeline and shall have an associated database that can be searched, sorted, stored, and transferred with all associated software at no additional cost. Database shall be compatible with Microsoft Excel or Access software.
- C. Upon substantial completion of the Work submit one complete set of DVDs of TV inspection Work.
- D. Refer to Section 01300 – SUBMITTALS, for required documentation to be submitted.

PART 2 – PRODUCTS

2.1 CLEANING EQUIPMENT

- A. Pipe cleaning equipment shall consist of high velocity jet equipment as defined in the section SEWER LINE CLEANING of NASSCO (current version).

- B. High velocity jet equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size and length lines indicated on the Drawings. Equipment shall also include a high velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.
- C. Self-propelled robotic cutters used to remove pipe obstruction and re-instate lateral connections shall be self-propelled with various types of cutting and grinding heads. The robot shall also have the ability to spray water on cutting heads and on the lens. The cutter shall be manned by an operator in a climate controlled studio inside of a specially outfitted cutting truck with room for an operator and an observer. The cutting truck shall provide electricity, compressed air and water in support of the self-propelled robot.

2.2 TELEVISION EQUIPMENT

- A. TV inspection equipment shall meet the standard set under TELEVISION INSPECTION, MAIN SEWERS of NASSCO (current version).
- B. Television equipment shall include television camera, television monitor, cables, power source, lights, and other equipment. The television camera shall be specifically designed and constructed for operation in connection with sewer inspection.
- C. Lighting for the camera shall be suitable to allow a clear picture, with minimal reflective glare, for the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor and other component of the video system shall be capable of producing a minimum 400 line resolution color video picture. Picture quality and definition shall be to the satisfaction of the ENGINEER.
- D. The camera shall have a remote controlled, pan and tilt type lens and lighting system capable of turning perpendicular to the direction of flow and rotating 360 degrees while inside the pipe. The camera shall be able to view a minimum service connection length of 4 feet in order to determine whether the connection is active or inactive.
- E. The remote reading footage counter shall be accurate to one (1) foot over the length of the particular section being inspected.

PART 3 – EXECUTION

3.1 ACCESS TO WORK

- A. Certain conditions may prevent the CONTRACTOR from completing portions of the work contained herein. Upon discovery of such conditions, the CONTRACTOR shall immediately notify the ENGINEER who will in turn notify the OWNER and attempt to arrive at a resolution. The ENGINEER will then direct the CONTRACTOR to

either return to the location once the condition is remedied or will remove the subject pipe from the project. These decisions will be made at the ENGINEER's sole discretion and no additional cost will be incurred for eliminating, re-scheduling or returning to areas of the work as long as the CONTRACTOR is working on other areas of the project. These conditions include but are not limited to the following:

1. Paved over or otherwise buried manholes.
2. Obstructions in the pipe
3. High flow conditions
4. Need for police detail or traffic control measures

3.2 PIPE CLEANING

- A. The CONTRACTOR shall use high velocity jet as described in the most recent version of NASSCO Standard Specifications.
- B. All sludge, dirt, sand, rocks, grease, and other solid or semisolid material resulting from the cleaning operation shall be disposed of in accordance with all applicable regulations and in a method acceptable to the OWNER. Pipe cleaning shall be performed in advance of pipe television inspection.
- C. The CONTRACTOR shall be responsible for the legal removal, transportation and disposal of all debris removed from the pipelines during the cleaning operation including any costs incurred. The OWNER shall allow disposal of sewer/drain pipeline matter in the OWNER's sewer/drain system as appropriate.
- D. Light cleaning shall be conducted at a minimum to permit the passage of the closed circuit television camera. Acceptance by the ENGINEER of the cleaning results will be based on the results of television inspection. If the results are unsatisfactory, the CONTRACTOR shall repeat the cleaning until accepted by the ENGINEER at no additional cost to the OWNER.
- E. The CONTRACTOR shall coordinate water use with the OWNER. CONTRACTOR shall be responsible for providing, installing and using all equipment needed to obtain water from hydrants in accordance with the OWNER's requirements.

3.3 HEAVY SEWER CLEANING

- A. The Contractor shall remove all obstructions in the sewer. All debris shall be removed from the sewer, including any debris that may have been washed up into any service connections (does not include known pre-existing conditions in service connections), drop connections or the bench wall of the manholes. This includes all grease, rocks, debris, fine roots, sticks, etc. that will reduce the hydraulic capacity of the sewer and limit future maintenance access of remote equipment. This work will include an unlimited number of passes by high velocity hydro-cleaning equipment. A mechanical/hydraulic Spinner Nozzle, chain cutters, and other special nozzles may be used where necessary at no additional cost to the Owner.
- B. The Contractor shall be responsible for any damage to the sewer or any service connection.

- C. The Contractor shall immediately notify the Owner and Engineer if he believes that this level of cleaning will cause a sewer collapse due to the existing deterioration of the host pipe. The Owner and Engineer will determine whether to continue or stop work.

3.4 LATERAL CUTS

- A. The Contractor shall cut/grind the protruding service connection by using a remote grinding/cutting device capable of removing, concrete, vitrified clay, PVC and other types of pipe material. The Contractor shall use remote CCTV equipment to monitor the progress of the work and ensure that the service connection is not damaged.
- B. A protruding break-in service connection shall be cut/ground flush to the main sewer pipe without scouring or damaging the main sewer or service connection. All cuttings must be screened, collected, and removed from the sewer for proper disposal.
- C. A final survey television inspection shall be conducted by the Contractor and shall slowly pan the entire circumference of the trimmed connection to verify the quality of the work.
- D. The Contractor shall immediately notify the Owner and Engineer if he believes that the pipe is not structurally sound. The Engineer or Owner shall determine, if the work should continue to be performed.
- E. If other than typical lateral materials are encountered, the Contractor shall notify the Engineer and Owner.

3.5 DEBRIS RECORDS

- A. The Contractor shall keep records of types of debris removed from each segment of pipe and provide these records to the Engineer and Owner in the format requested by the Engineer or Owner.

3.6 PIPE INSPECTION

- A. Pipe shall be visually inspected by means of closed-circuit television. The television camera used for the inspection shall be one specifically designed and constructed for such inspection.
- B. DVD Recordings: Electronic video equipment shall display and record during the entire inspection at a minimum the following data for each pipeline reach video recorded.
 - 1. Date recorded
 - 2. Footage counter
 - 3. Voice over narration noting any significant observations made during the inspection work, including the following:
 - a. Length, size and type of pipe.
 - b. Location of offsets and misalignments of any part.
 - c. Location and type of defect in pipe such as cracks, holes, etc.
 - d. Protruding service connections.

- e. Root intrusion.
 - f. Visible infiltration/inflow sources estimated in gallons per minute (GPM).
 - g. Type and depth of debris in pipe.
 - h. Sluggish flow or wastewater backing up into manhole.
 - i. Overall condition of pipe section (from manhole to manhole).
- 4. Pipeline reach identification (street location, MH to MH)
- C. DVD and Television Logs: The CONTRACTOR shall prepare individual log sheets of each line section inspected, recording, at a minimum, the following information in tabular and graphic format, and submit duplicate copies electronically to ENGINEER at regular intervals not exceeding weekly intervals:
 - 1. Project identification
 - 2. List of Subcontractors at the site.
 - 3. Count of personnel at the site, by job classification.
 - 4. List of major equipment utilized on site.
 - 5. Numbered pages including an index sheet listing the pipeline segments, street name and corresponding page of the report they are located.
 - 6. Tabular and graphic display observation made during the inspection work as listed herein.
 - 7. Pipeline reach identification (street location, MH to MH)
- D. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to ensure proper identification of the pipeline's condition. In no case will the television camera be pulled at a speed greater than 20 feet per minute. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the pipeline conditions may be used to move the camera through the line.
- E. If, during the inspection operation the television camera will not pass through the entire pipeline section, the CONTRACTOR shall reset his equipment in a manner so that the inspection can be performed from the opposite manhole.
- F. Flow control shall be in accordance with Section 02538 – TEMPORARY BY-PASS PUMPING.
- G. Standing water within a sagging pipe shall be removed so that the pipe can be adequately television inspected. A minimum of 80% of the pipe shall be visible before television inspection. A minimum of one attempt using standard cleaning equipment shall be made to clear lines surcharged due to line sages. The CONTRACTOR shall maintain a list of line segments that are significantly surcharged and provide this list to the ENGINEER daily.
- H. Television inspection shall be performed in advance of all testing and rehabilitation activities.
- I. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other device approved by the ENGINEER. The measurements recorded in the log shall be zeroed at the point the camera lens begins the pipeline penetration of the upstream manhole, unless specific permission is given by the

ENGINEER to do otherwise. Footage shall be shown on the video data view at all times and will be zeroed at the beginning of each run.

END OF SECTION 02440

SECTION 02441

ROOT TREATMENT AND REMOVAL

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

- A. Remove roots from the sewer and drain pipelines indicated in Appendix A or as directed by ENGINEER in a manner that is compliant with the guidelines set forth within this section. This Work includes furnishing all equipment, material and labor required to perform the services described herein.

1.2 REFERENCES:

- A. The following standard is referenced as part of this specification:

The National Association of Sewer Service Companies (NASSCO) Recommended Specifications for Sewer Collection System Rehabilitation (Current Edition).

1.3 DESCRIPTION

- A. Mechanical root removal shall be performed as described in Item 2, Root Removal, of NASSCO's section entitled SEWER LINE CLEANING.
- B. Chemical root treatment will not be allowed.
- C. The CONTRACTOR may propose alternative processes and/or products for review and approval by the ENGINEER.

1.4 SUBMITTALS

- A. Prior to beginning the Work, submit six (6) sets of the following:
 - 1. Qualifications of the firm/personnel who will perform the Work.
 - 2. Description of system proposed for handling existing flows, if necessary, during the procedures to be carried out.
 - 3. Description of the system, methods, process, and equipment proposed to perform root treatment and removal.
 - 4. Submittals of MSDS, product labels, and other submittals as described in relevant NASSCO specifications.
 - 5. Manufacturer's warranty
- B. Submit detailed television inspection reports to the ENGINEER as specified herein prior to initiating any rehabilitation Work.

1. Submit inspection reports and DVD video record for review and approval by ENGINEER weekly, minimum.
 2. DVD shall provide a visual and audio record of conditions encountered in the pipeline and shall have an associated database that can be searched, sorted, stored, and transferred with all associated software at no additional cost. Database shall be compatible with Microsoft Excel or Access software.
 3. Upon substantial completion of the Work submit one complete set of DVDs of TV inspection Work.
 4. A tabulation showing the locations and quantities of the Work shall also be submitted with pay requisitions.
- C. Refer to Section 01300 – SUBMITTALS, for required documentation to be submitted.

1.5 QUALITY ASSURANCE

- A. Refer to Section 01400 – QUALITY ASSURANCE, for qualification requirements.
- B. The work described herein shall be performed by a company with not less than five (5) years of experience in providing the specified services. Supervisory personnel shall have at least three (3) years of experience in providing the specified services and shall be present at the jobsite DURING all work as specified herein.

PART 2 – PRODUCTS

2.1 ROOT REMOVAL EQUIPMENT

- A. Mechanical root removal shall be by rodding machines, bucket machines, and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners. See section 02440 for additional cleaning equipment requirements.

PART 3 – EXECUTION

3.1 ACCESS TO WORK

- A. Certain conditions may prevent the CONTRACTOR from completing portions of the work contained herein. Upon discovery of such conditions, the CONTRACTOR shall immediately notify the ENGINEER who will in turn notify the OWNER and attempt to arrive at a resolution. The ENGINEER will then direct the CONTRACTOR to either return to the location once the condition is remedied or will remove the subject pipe from the project. These decisions will be made at the ENGINEER's sole discretion and no additional cost will be incurred for eliminating, re-scheduling or returning to areas of the work as long as the CONTRACTOR is working on other areas of the project. These conditions include but are not limited to the following:

1. Paved over or otherwise buried manholes
2. Obstructions in the pipe
3. High flow conditions
4. Need for police detail or traffic control measures

B. MECHANICAL ROOT REMOVAL PROCESS

1. Roots penetrating into sewer or drain pipes shall be removed through mechanical means in sections indicated in the Contract Drawings or where determined to be necessary by the Engineer.
2. The Contractor shall capture and remove all roots from the line.

C. PROPERTY DAMAGE CAUSED BY THE CONTRACTOR

1. Should the Contractor or his employees cause any damage to public or private property, the Contractor will be required to make repairs immediately. The Owner may, however, elect to make repairs or replacements of damaged property and deduct the cost of such from moneys due or to become due the Contractor under this contract with the Owner. The Contractor shall not be responsible for any damages caused by sewer or drain stoppages.

D. POST REMOVAL INSPECTION

1. Television shall be performed to determine if root removal process was effective. The ENGINEER shall determine if the level of removal is sufficient. The CONTRACTOR shall return if necessary to preform additional root removal if the ENGINEER'S review shows initial root removal efforts were insufficient.

END OF SECTION 02440

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SECTION 02538

TEMPORARY BY-PASS PUMPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. Furnish, install, field test, and operate temporary by-pass pumping systems for the purpose of diverting sewage or drainage flow around work areas for the duration of the project. The pumping system shall protect against surcharging of the existing sewer/drain system upstream of the work area by installing adequate temporary by-pass pumping to handle dry weather and wet weather flows. Provide all labor, tools, materials, and equipment necessary to by-pass flow around the work areas.
- B. The design, installation, and operation of temporary by-pass pumping systems shall be the CONTRACTOR's responsibility. The CONTRACTOR shall provide the services of a professional by-pass company who can demonstrate to the OWNER and ENGINEER that the company specializes in the design and operation of temporary by-pass pumping systems. The by-pass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
- C. By-passing operations shall be continuously monitored by the CONTRACTOR, regardless of duration or timing of by-passing. By-passing should be coordinated with low-flow times, to the extent feasible. Restore normal service to entire system at the end of normal working hours every day or post an attendant on-site. No unattended by-pass pumping will be allowed.
- D. Maintain temporary by-pass pumping systems so that they are completely functional throughout the required period of service.
- E. Provide all maintenance including manufacturer recommended preventative maintenance and on-call repair services. CONTRACTOR shall provide repair services and/or replacement equipment 24 hours per day, 7 days per week within 4 hours of being notified.
- F. The CONTRACTOR shall not allow sewage or drainage flow to discharge to any salt or fresh water body by means of overflow, by-pass pumping, or any other method that may contaminate these water areas.

- G. Except as specifically permitted, the installation of the by-pass pipelines is prohibited in all saltmarsh/wetland areas. The pipeline must be located off streets and sidewalks and on shoulders of the roads. When the by-pass pipeline crosses local streets and private driveways, the Contractor must place the by-pass pipelines in trenches and cover with temporary pavement. Upon completion of the by-pass pumping operations, and after the receipt of written permission from the ENGINEER, the CONTRACTOR shall removal all the piping, restore all property to pre-construction condition, and restore all pavement. The CONTRACTOR is responsible for obtaining any approvals from the OWNER for placement of the temporary pipeline within public ways.

1.3 SUBMITTALS

- A. Submit the following in accordance with the Conditions of Contract and Division 1 Specification Sections and as specified herein:
1. A detailed description of the proposed pumping systems, project approach, and requirements herewithin stamped by a Professional Engineer in the State of Massachusetts.
 2. A minimum of five reference installations of projects with similar size in wastewater by-pass pumping applications. Include contact names and phone numbers.
 3. A detailed description of each proposed temporary by-pass pumping system including pumps, pump drives, piping, hoses, valves, fittings, controls, wiring, and other ancillary accessories required to provide a complete operating system.
 4. Complete list of system components to be provided.
 5. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 6. Performance data for each type of equipment that will show compliance with specification requirements stated herein.
 7. Detailed plans and sections showing the proposed pumping system layout including dimensions and elevations. Plan shall include but not limited to the following:
 - a. Staging area and access requirements for all pumps.
 - b. Number, size, material, location, and method of installation of suction piping.
 - c. Number, size, material, location, and method of installation of discharge piping.
 - d. Sewer/drain plugging method and types of plugs.

- e. Pump size, capacity, number of units, diesel engine specifications, fuel tank capacity, fuel consumption requirements, and method of refueling.
 - f. Calculations of static lift, pipe size selection, friction losses, flow velocity, and pump selection.
 - g. Provide pump performance curves showing they meet calculated requirements for head, capacity, and NPSH.
 - h. Proposed method of freeze protection.
 - i. Proposed method of noise control for each pump with external dBA value.
 - j. Temporary pipe supports, anchorage, cover material, and other accessories as required to stabilize the piping system.
 - k. Proposed pump controls and alarm panel and system for remote transmittal of alarms.
 - l. A description and schedule for dismantling the by-pass system, and restoring normal operations.
- 8. Installation schedule and maintenance schedule.
 - 9. Contact phone number and pager number for 24-hour service.
 - 10. Recommend spare parts to be stored on-site for emergency maintenance.
 - 11. Emergency response plan describing the intended means of handling but not limited to the following:
 - a. Break or failure of by-pass piping.
 - b. Failure of by-pass pump.
 - c. Overflows.
 - d. Backup into dwelling or onto private property.
 - e. Operations during inclement weather including snow storms.
 - 12. Procedures for start-up and testing of the by-pass pumping system to demonstrate compliance with specified automatic operation and maintenance requirements.
 - 13. Field inspection reports.
 - 14. Recommendations for short- and long-term storage.

1.4 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 - QUALITY ASSURANCE and as specified.
- B. The CONTRACTOR shall employ the services of a professional by-pass pumping company who can demonstrate five years of recent and continuous specialization in

the design, installation, operation, and removal of temporary by-pass pumping systems in wastewater applications. The complete system shall be furnished from a single vendor who shall be capable of providing service staff, repair parts and replacement of any deficient system component within 4 hours of a service call, twenty-four hours per day, and seven days per week.

- C. The by-pass pumping system shall be standard equipment and totally suited for the application as detailed herein. The equipment to be furnished shall be satisfactory and safely designed, in accordance with the design parameters as detailed in these contract documents. It shall be constructed for continuous, automatic operation, for extended periods of time.
- D. All items shall be designed and constructed in full accordance with all applicable state and local codes and regulations. Labor, materials, and costs required to meet state codes shall be the responsibility of the CONTRACTOR and the professional by-pass pumping company.
- E. Provide services of factory-trained professional by-pass pumping company representative, specifically trained on type of equipment specified:
 - 1. Man-day requirements listed exclusive of travel time, and do not relieve CONTRACTOR of obligation to provide sufficient service to place equipment in satisfactory operation.
 - 2. Installation and Start-up/Testing: Sufficient time to assist in location of pumping system; coordination of piping, electrical, miscellaneous utility connections; calibration, testing and start-up, but not less than:
 - a. 1 day per pumping system set-up
 - 3. Credit to the OWNER unused service man-days specified above, at published field service rate plus travel costs.

1.5 FLOW DATA

- A. The entire project area consists of active sanitary sewers and drains; therefore, flows and flow data are variable depending on location and conditions. It is the responsibility of the CONTRACTOR to maintain flows in accordance with this specification under all flow conditions and, therefore, the CONTRACTOR is encouraged to visit the project locations prior to Work to visually inspect flow conditions.
- B. Calculations of peak flows, pump rates, pump curves, and other relevant design data shall be provided by the CONTRACTOR prior to commencing the work. One by-pass pumping plan will be required at each by-pass location. Each by-pass pumping plan shall be stamped by a Massachusetts Registered Professional Engineer in accordance with Paragraph 1.3.

PART 2 - MATERIALS

2.1 PUMPING EQUIPMENT

- A. Furnish pumping units and all accessories from a single vendor. Each temporary bypass pumping system shall be complete including pumps, drives, piping, piping headers, valves, flow meter, controls, and appurtenances as required for a complete system.
- B. The pumps, drives, and controls shall be designed and built for 24-hour continuous service at any and all points within the required range of operation, without overheating, without cavitation, and without excessive vibration or strain. All parts shall be so designed and proportioned as to have the strength, stability, and stiffness and be constructed to meet the specified requirements. Methods shall be provided for inspection, repairs, and adjustment.
- C. All equipment shall be suitable for outdoor operation under adverse weather conditions. Provide protection from freezing as required to maintain system operation.
- D. All pumps shall be centrifugal, end suction, fully automatic self-priming units that do not require the use of foot-valves, vacuum pumps, diaphragm pumps, or isolation valves or float apparatus in the priming system. Pump seals shall be high pressure, mechanical self-adjusting type with solid carbide faces capable of withstanding suction pressures to 100 psi without the pump running. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. The oil bath reservoir shall not come in contact with or leak into the pumped water. Each pump shall be capable of running dry, with no damage for extended periods of time. All pump seal metal parts shall be stainless steel. All elastomers shall be Viton.
- E. Each pump shall be driven by a diesel engine. Diesel engine shall be water cooled. Each pump and diesel engine shall be skid mounted with integral fuel tank and skid lifting bracket.
- F. Provide automatic start/stop controls for the pumping system to automatically maintain system flow. Controls shall be contained in a local NEMA 4 rated control panel with provision to manually operate each pump, provide indication of pump operation, and indicate the total flow being pumped. The pump control panel shall include high/low water level alarms and remote auto-dialer to send alarms to a minimum of four telephone numbers.
- G. Pumps shall be provided with noise protective acoustically-silenced enclosures that meet all local, MA DEP, and City of Waltham construction noise requirements and as a minimum: 80 dBA at seven feet; 65 dBA at thirty feet; 60 dBA at nearest

residence; and less than 10 dBA above background levels; and no pure tone condition. CONTRACTOR shall be responsible for all materials, labor, and equipment to show compliance with the above requirements.

2.2 ADDITIONAL EQUIPMENT

- A. Provide all required suction and discharge pipe and fittings, discharge manifold pipe and fittings, shutoff valves, check valves, flow meter, pressure regulating valves, insulation, freeze protection, and all required accessories.
- B. All pipe and fittings shall be steel with flanged or quick connect coupling connections, or high density polyethylene pipe with fused joints. All joints must be 100 percent restrained. Suction piping shall be rated for 25-in Hg vacuum. Discharge piping, fittings, connections, valves, and other discharge piping accessories shall be rated for a minimum working pressure of 150 psi.
- C. Lay flat hose shall be extra heavy duty, highly abrasive resistant and fitted with gasketed couplings. Hose shall be rated for a minimum working pressure of 150 psi.
- D. Aluminum "irrigation" type piping or glued PVC pipe will not be allowed.

PART 3 - EXECUTION

3.1 GENERAL

- A. The CONTRACTOR shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or equipment breakdown. One stand-by pump for each size pump utilized shall be installed and piped into the suction and discharge manifold at the by-pass pump, ready for automatic start and use in the event of primary pump failure.
- B. The CONTRACTOR shall adequately handle all flow, even instantaneous peak flows, without damage or overflow. The CONTRACTOR shall make himself aware of potential large instantaneous flow contributors connected to the sewer and/or drain.
- C. The CONTRACTOR shall remove manhole sections or make connections to the existing and construct temporary by-pass pumping structures only at the access locations indicated on the Drawings and maybe required to provide adequate suction conduit.
- D. Plugging or blocking of sewage and drainage flows shall incorporate primary and secondary plugging devices. When plugging or blocking is no longer needed for performance and acceptance or Work, it is to be removed in a manner that permits the sewage/drainage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

- E. Provide 1-inch minimum thick, tight plywood covers over by-pass discharge and suction manholes. Pipes to be sealed with foam rubber collar and sealed around all pipe penetrations.
- F. All by-pass pipes shall be buried at all driveway and street crossings.
- G. CONTRACTOR shall provide chain-link fence enclosures to secure pumping systems.
- H. The by-pass pumping system shall not require excavation to reduce the suction lift without approval of the ENGINEER. Pumps may not be benched down to make the suction lift unless approved by the ENGINEER.
- I. The CONTRACTOR shall exercise caution and comply with OSHA requirements when working in the presence of gases, combustible or oxygen-deficient atmospheres, and confined spaces.

3.2 DELIVERY, STORAGE AND HANDLING

- A. Ship equipment, materials and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.
- B. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended.
- C. Deliver spare parts at same time as pertaining equipment.
- D. Store and safeguard equipment, material, and spare parts.

3.3 INSTALLATION

- A. Installation shall be in accordance with the professional by-pass pumping company recommendations and approved shop drawing submittals.
- B. Install pumping units on a firm level surface.
- C. Equipment failing to meet specific conditions shall be removed and replaced at no additional cost to the OWNER.

3.4 FIELD TEST AND QUALITY CONTROL

- A. The CONTRACTOR shall have the professional by-pass pumping company factory representative present during field installation. It shall be the CONTRACTOR's responsibility to obtain the recommended installation procedures directly from the company, and comply with same.

- B. CONTRACTOR shall have professional by-pass pumping company provide a factory service representative who has complete knowledge of the operation of the pumps, including mechanical, electrical, control, and alarm components as necessary to perform field testing and initial start-up to assure and demonstrate the proper performance of all equipment and components.
- C. Field tests shall be performed by the CONTRACTOR under the instruction of the factory service engineer. All field testing to be witnessed by the ENGINEER in the field. Provide a minimum of seven (7) days' notice prior to all field tests. Submit certification of successfully conducted field tests.
- D. The CONTRACTOR shall perform leakage and pressure tests of the by-pass pumping discharge piping using clean water prior to actual operation. Field testing shall demonstrate a minimum of 8 hours of continuous operation. During the 8 hours of continuous operation, the system shall demonstrate the ability to automatically start and stop pumps in response to changing flow conditions.
- E. In the event that a unit fails to pass a test, make all modifications required to place the unit in proper working order.
- F. In the event that a unit fails a test a second time, remove the unit and replace with a satisfactory one, at no cost to the OWNER.
- G. The CONTRACTOR shall provide all necessary instrumentation, equipment, devices, and appurtenances, as well as temporary wiring or piping, required to perform field tests.

3.5 SYSTEM OPERATION

- A. The by-pass pumping operations must be attended at all times. Unattended by-pass will not be allowed. If by-pass pumping must continue past working hours an attendant must be present at all times.
- B. Perform all required maintenance on the equipment to maintain the system integrity and capacity as specified.
- C. Provide clean-up and disposal of contaminated material and reporting for all spills.
- D. At the completion of the period of service, disconnect all temporary piping and remove all system components from the site. Restore the work site to its original condition

3.6 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700 - CONTRACT CLOSEOUT.

END OF SECTION 02538

SECTION 02764

CURED-IN-PLACE PIPE (CIPP)

PART 1 - GENERAL

1.1. SUMMARY

- A. The scope of Work includes the rehabilitation of sewer pipe via the installation of a resin-impregnated flexible tube which is inverted into the original conduit in accordance with ASTM F1216. The resin is cured by hot water or steam to form a hard, impermeable, corrosion resistant pipe. When cured, the finished pipe will be continuous and tightly formed to the original conduit.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.
- C. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Section 01170 – SPECIAL PROVISIONS
 - 2. Section 02440 – PIPELINE CLEANING AND INSPECTION
 - 3. Section 02538 – TEMPORARY BY-PASS PUMPING
 - 4. Section 02765 – SEWER LATERAL SEALING (CIPP METHOD)

1.2. QAULITY ASSURANCE

- A. The work described herein shall be performed by a company with not less than five (5) years of experience in providing the required services, employing experienced workers and experienced supervisory personnel. Supervisory personnel shall have not less than three (3) years of experience in providing the required services and shall be present at the jobsite during all work related to the required services.

1.3. SUBMITTALS

- A. The CONTRACTOR is required to provide the following documentation as a minimum:

1. Personnel Experience – Submit evidence of personnel experience as required under 1.2 QUALITY ASSURANCE.
 2. CONTRACTOR's experience – The CONTRACTOR shall provide evidence of previous installations of the product bid for this project as installed by the CONTRACTOR. Contact names and telephone numbers shall be provided for 5 recent projects to verify the CONTRACTOR's experience level.
 3. Description of materials and installation process, including manufacturer name and material specifications.
 4. Third party testing and verification of design approach. This data shall support the design calculation described below. This data shall verify that the design format utilized by the CONTRACTOR has been independently reviewed and verified.
 5. Long-term creep data (50 years), including third party verification. This data shall include the long-term results of the product bid for this project. The long term physical properties of the CIPP as determined via this testing cannot be exceeded in the design calculations utilized to calculate the liner wall thickness.
- B. Prior to beginning the work, the CONTRACTOR shall submit a written plan for contacting homeowners whose service connections may be affected due to the installation of liner. Such plan is subject to approval by the ENGINEER and the OWNER.
- C. The CONTRACTOR shall submit the following information for each inversion within 21 days following completion of the liner installation.
1. Pre-inversion television inspection logs and DVDs
 2. Liner order sheet describing the material ordered
 3. Service connection reinstatement sign-off sheet
 4. Thermocouple log kept during inversion process
 5. Post-inversion television inspection logs and DVDs
 6. Material testing results
 7. Information should be organized by inversion and two (2) electronic copies on DVD shall be delivered.

- D. The CONTRACTOR shall prepare and obtain the MWRA One-Time-Only Discharge Request Permit as described in Specification Section 01170 – SPECIAL PROVISIONS.

1.4. WARRANTY

- A. The CONTRACTOR shall make all necessary repairs and replacements to remedy, and at no cost to the OWNER, any and all defects, breaks, or failures of the Work occurring within one (1) year following the date of acceptance of the Work due to faulty or inadequate materials or workmanship.

1.5 REFERENCED DOCUMENTS

- A. This specification references ASTM F1216 and F1743 which are made a part of hereof by such reference and shall be the latest edition and revision thereof. ASTM F1216 and/or F1743 shall govern when this specification does not address installation methods and materials. If there is a conflict between ASTM F1216 and/or F1743 and this specification, this specification will govern.
- B. The following standard is referenced as part of this specification. The National Association of Sewer Service Companies (NASSCO) recommended specifications for sewer collection system rehabilitation cured-in-place pipe (Insituform Process)

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Cured-in-place pipe shall be as manufactured by Insituform Technologies, National Liner, Inliner Technologies, or approved equal.
- B. The sewer tube shall consist of one or more layers of absorbent, non-woven felt fiber and shall meet the requirements of ASTM F1216, Section 5.1.
- C. The wetout tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the design thickness.
- D. The tube shall be fabricated to a size that when installed will tightly fit the internal circumference and length of the original pipe. The tube shall be constructed to withstand inversion pressure, have sufficient strength to bridge missing pipe, stretch to fit irregular pipe sections and shall invert smoothly around bends. Allowance shall be made for circumferential stretching during inversion. Overlapped layers of felt that cause lumps in the final product shall not be allowed
- E. The outside layer of the CIP tube (before wetout) shall be coated with a translucent flexible polyethylene material that is compatible with the resin system used and allows inspection of the impregnation procedure. The coating shall not be subject to

delamination after cure. The plastic coating shall separate the resin from the inversion water without leakage, accommodate inversion, stretch to size and shall not delineate before, during or after cure.

- F. The CIPP shall be homogeneous across the entire wall thickness and shall contain no intermediate or encapsulated elastomeric layers. No materials shall be included in the tube that is subject to delamination in the cured CIP). No dry or unsaturated layers shall be evident.
- G. The bond between CIPP layers shall be strong and uniform. All layers, after cure, must form one homogenous structural pipe wall with no part of the tube left unsaturated by resin.
- H. Seams in the tube shall be stronger than the unseamed felt. Where the length requires joining, the sewn joint shall not be perpendicular to the long axis but spirally formed and sewn.
- I. The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 feet. Such markings shall include the Manufacturers name or identifying symbol.

2.2. RESIN

- A. The resin system shall meet the requirements of ASTM F1216, Section 5.2.

2.3 STRUCTURAL REQUIREMENTS

- A. The CIPP shall be designated as per ASTM F1216, designed to have sufficient strength to handle dead loads, live loads, and groundwater load imposed, assuming fully deteriorated design conditions.
- B. The CONTRACTOR shall verify pipe size and length prior to manufacture and installation of the liner tube.
- C. The CIPP design shall assume no bonding to the original pipe wall.

2.4. SAFETY

- A. The CONTRACTOR's personnel shall have OSHA confined space entry training. The confined space entry shall be in accordance with the requirements and protocol as specified in 29 CFR 1910.146, Permit Required Confined Spaces, and ASTM D 4276-84.

2.5. TESTING REQUIREMENTS

- A. Chemical Resistance - The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2 and the chemicals listed within Table X2.1. CIPP

samples for testing shall be of the tube and resin system similar to that proposed for actual construction. It is required that CIP samples with and without the coating meet these chemical-testing requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. CIPP installation shall be in accordance with ASTM F1216, Section 7, with the following additional requirements:
- B. Each pipeline segment shall be television inspected prior to the installation of the cured-in-place liner. The inspection shall be performed in “dry-pipe” conditions with no flow in the pipe. The pipe shall be clean and free of all obstructions prior to installation of the liner.
- C. Prior to installation of the cured-in-place pipe the CONTRACTOR shall install a hydrophilic rubber gasket on the inside of each pipe where it meets a manhole such that the hydrophilic rubber gasket is between the host pipe and the cured-in-place pipe. The annular space shall be made watertight at the ends of the liner in the manholes.
- A. After the liner has been cured in place, the CONTRACTOR shall reinstate all active service connections as shown on the Drawings. Branch connections to buildings shall be reinstated to a minimum of 95% of the inside diameter of the existing service connection without excavation, utilizing a remotely controlled cutting device, monitored by a video TV camera. No additional payment will be made for excavations for the purpose of reinstating connections and the CONTRACTOR will be responsible for all cost and liability associated with such excavation and restoration work.
- B. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the migration of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To assure thorough wet out, the vacuum application points shall be made, sealed and moved along the length of the liner tube during the impregnation process. A roller system shall be used to uniformly distribute the resin throughout the tube.
- C. The OWNER shall have the right to inspect the wetout operation. The CONTRACTOR shall inform the OWNER 48 hours in advance of wetout.
- D. The installed liner shall be cured by circulating hot water or steam through the resin impregnated tube. Ambient curing shall not be allowed. Curing and cool down of the liner shall be in strict accordance with the manufacturers recommendations. CONTRACTOR is responsible for infiltration/groundwater control. Curing process

should account for extraneous infiltration. CONTRACTOR is responsible for any lining defects attributed to insufficient curing due to infiltration.

- E. Temperature gauges / thermocouples shall be placed to determine the temperature of the incoming and outgoing water/steam from the heat source. Another such gauge shall be placed in the interior and at the bottom of the tube at the remote end to determine the temperature at those locations during the cure cycle.
- F. The CONTRACTOR shall meter and pay for all water used from the water supply. The approval, assistance, and supervision of the local Water Department shall be obtained prior to any such use. When hydrants are to be operated, the CONTRACTOR shall contact the Water Department and inform the Water Department of the CONTRACTOR's intentions to use and meter water. The CONTRACTOR shall take precaution to prevent any damage to either the hydrant or the main. If directed to operate hydrants, a proper hydrant wrench shall be used for opening and closing the hydrants. Any damage to any part of the water system resulting from misuse by the CONTRACTOR's employees or subcontractors shall be repaired at the CONTRACTOR's expense. The CONTRACTOR shall use water efficiently and avoid waste.
- G. If potable water is utilized in conjunction with pipe lining equipment, the supply lines from hydrants, or other sources, shall be equipped with a suitable backflow prevention device to ensure against pollution of portable water in the event that a negative (suction) head develops.
- H. Discharge of heated water used for curing process shall be in accordance with MWRA Sewer Use Regulations 360 CMR 10.021-10.02. CONTRACTOR is responsible for all costs associated with MWRA discharge requirements for the CIPP liner.
- I. No water used for curing and/or lining activities shall be discharged to the drain. All water used for curing/lining activities shall be discharged in accordance with MWRA requirements.
- J. Reinstatement of Service Connections - After the new pipe has been cured in place, the CONTRACTOR shall reopen the existing service connections as designated on the Drawings and by the OWNER. If the OWNER does not so designate, the CONTRACTOR shall reinstate all connections. It is the intent of these specifications that this shall be done without excavation, and in the case of non-man entry pipes, from the interior of the pipeline by means of a remotely controlled cutting device monitored by a television camera. No additional payment will be made for excavations for the purpose of reopening connections and the CONTRACTOR shall be responsible for all costs and liability associated with such excavation and restoration Work.
- K. All reinstated service connections shall be sealed in accordance with SECTION 02765 – SEWER LATERAL SEALING (CIPP METHOD). The CONTRACTOR

shall make certain that the annular space between the host pipe and the cured-in-place pipe is fully sealed.

3.2 INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS

- A. It shall be the responsibility of the CONTRACTOR to confirm location of all designated manhole access points that shall be open and accessible for the Work and provide rights of access to these points. If a street must be closed to traffic because of the orientation of the sewer, the OWNER shall institute the actions necessary to do this for the mutually agreed time period. The CONTRACTOR shall provide traffic management plan and neighborhood communication plan for OWNER's review prior to commencement of Work.
- B. Line Obstructions - It shall be the responsibility of the CONTRACTOR to clear the line of obstructions such as solids, protruding reinforcement and roots that will prevent the insertion of CIP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the insertion process, and it can not be removed by conventional sewer cleaning, cutting, or grinder equipment, then the CONTRACTOR shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the OWNER's representative prior to the commencement of the Work and shall be considered as a separate pay item.
- C. The CONTRACTOR shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be temporarily out of service, the maximum amount of time of no service shall be 18 hours for any property served by the sewer. The CONTRACTOR shall be required to notify the OWNER and all affected properties whose service laterals will be out of commission and to advise against water usage until the sewer main is back in service. Such notification shall be provided to the OWNER at least one week prior to service disconnecting.
- D. Public Notification – If work is conducted on a public sewer, a public notification program shall be implemented, and shall as a minimum require the CONTRACTOR to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the Work to be conducted, and when the sewer will be off-line. CONTRACTOR shall notify residents/property owners of each section that their service will be disrupted a MINIMUM of FORTY-EIGHT (48) hours in advance.

The CONTRACTOR shall also provide the following:

- 1. Written notice to be delivered to each home or business describing the Work, schedule, how it affects them, and a local telephone number of the CONTRACTOR they can call to discuss the project or any problems that could arise.

2. Personal contact and attempted written notice the day prior to the beginning of Work being conducted on the section relative to the residents affected.
 3. Personal contact with any home or business that cannot be reconnected within the time stated in the written notice.
- E. The CONTRACTOR shall be responsible for confirming the locations of service connections. The OWNER will dictate whether or not service connections will be reinstated. The OWNER will provide written authorization of service connections to be reinstated. If no such direction is provided, visibly uncapped services will be reinstated.

3.3 INSPECTION AND TESTING

- A. For each inversion length installed, the CONTRACTOR shall prepare one CIPP sample. The flexural strength and modulus test results of the cured liner shall meet or exceed the values required by the approved design submittal and the wall thickness of the cured liner shall be at least equal to that required in the approved design submittal.
- B. An independent testing laboratory shall test the cured-in-place pipe samples and the results are to be sent directly to the ENGINEER within 21 calendar days following the completion of each inversion.
- C. The cost of obtaining and testing the samples, and transmitting testing results shall be the sole responsibility of the CONTRACTOR and shall be considered incidental to the lining process.
- D. Inversions where the cured-in-place pipe samples that do not meet the requirements of ASTM D790 and D638 as indicated in ASTM F1216 Section 8 will be televised by the CONTRACTOR at no additional cost to the Owner, for review by the ENGINEER. Liner deemed unacceptable by the ENGINEER will be removed and replaced at no additional cost to the Owner.
- E. Each sewer segment shall be television inspected after the liner installation has been completed. The inspection shall be performed in “dry-pipe” conditions with no flow in the pipe. Post rehabilitation television inspection shall be performed prior to removing any sewer bypass equipment. Post rehabilitation television inspection shall be considered incidental to the lining process and shall not be measured separately for payment.
- F. Two (2) copies of the closed circuit television video shall be provided to the ENGINEER on DVD.

3.4 WARRANTY TESTING

- A. Prior to the expiration of the warranty period during a period of high groundwater as determined by the ENGINEER, 100% of all CIPP shall be inspected in accordance with Section 02440 – PIPELINE CLEANING AND INSPECTION prior to final payment.
- B. Finished pipe shall be continuous through the entire length between manholes, true to line and grade, with no visual bulges, sags, protrusions, deflections, offset joints, leaking joints, wrinkles, dry spots, or other visible infiltration, or other defects that would impair the intended use of the completed pipeline. The CONTRACTOR shall repair any defects found in the cured-in-place pipe liner.
- C. Final acceptance of rehabilitation Work shall not be granted until all defective areas are repaired to the ENGINEER's satisfaction. All inspection and repair of defects within the warranty period shall be provided at no cost to the OWNER.

3.5 CLEAN-UP

- A. Upon acceptance of the installation Work and testing, the CONTRACTOR shall restore the project area affected by the operations to a condition at least equal to that existing prior to the Work.

END OF SECTION 02764

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SECTION 02765

SEWER LATERAL SEALING (CIPP METHOD)

PART 1 - GENERAL

1.1. SUMMARY

- A. The scope of Work includes rehabilitation and reconnection of service lateral connections to rehabilitated sewer lines, without excavation, by installation and curing of a resin-impregnated, flexible insert that will be installed into the existing service lateral utilizing a pressure apparatus and curing device positioned in the mainline pipe.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.
- C. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Section 02440 – SEWER CLEANING AND INSPECTION
 - 2. Section 02538 – TEMPORARY BY-PASS SEWAGE PUMPING
 - 3. Section 02764 – CURED-IN-PLACE PIPE (CIPP)

1.3 REFERENCES

- A. This specification references the American Society for Testing and Materials (ASTM) standards that are made part hereof by reference and shall be the latest edition and revision.
 - 1. ASTM D160 - Abbreviations of Terms Relating to Plastics
 - 2. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
 - 3. ASTM D578 - Standard Specifications for Glass Fiber Strands
 - 4. ASTM D790 - Test Methods for Flexural Properties of Un-Reinforced and Reinforced Plastics and Electrical Insulating Materials, and

5. ASTM D2990 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
6. ASTM D3681- Standard Test Method for Chemical Resistance of “Fiberglass” (Glass–Fiber–Reinforced Thermosetting-Resin) Pipe in a Deflected Condition
7. ASTM D5813 - Cured-in-Place Thermosetting Resin Sewer Pipe
8. ASTM F1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
9. ASTM F1743 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
10. ASTM F2561 - Standard Practice for Rehabilitation of a Sewer Service Lateral and its Connection to the Main Using a One-Piece Main and Lateral Cured-in Place Liner
11. Reference is further made to NASSCO Standard: Recommended Specifications for Sewer Collection Systems Rehabilitation.

1.4 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 - Quality Assurance, and as specified.
- B. The CONTRACTOR and manufacturer (if different) shall ensure that the scope of Work is fulfilled and meets a level of quality of products, materials and workmanship that is commercially available. The manufacturer and the CONTRACTOR shall establish quality assurance requirements similar to ISO 9000 quality standards as a minimum. The CONTRACTOR shall permit the OWNER access to any portion of the manufacturing process and/or installation activities at the request of the OWNER to ensure that the qualities of the materials and/or service are satisfactory.

1.5 SUBMITTALS

- A. The CONTRACTOR is required to provide the following documentation as a minimum:
 1. CONTRACTOR experience – The CONTRACTOR shall provide evidence of previous installations of the product bid for this project. Contact names and telephone numbers shall be provided for the five (5) most recent projects to verify the CONTRACTOR’s experience level.
 2. Description of materials and installation process, including bypass pumping plan.

3. Third party testing and verification of design approach. This data shall verify that the design format utilized by the CONTRACTOR has been independently reviewed and verified.
4. Long-term creep data (50 years), including third party verification. This data shall include the long-term results of the product bid for this project. The long term physical properties of the CIP as determined via this testing cannot be exceeded in the design calculations utilized to calculate the Liner wall thickness.
5. Proposed flexural modulus

1.6 WARRANTY

- A. If, within the warranty period, the Liner installed in the sewer system is not acceptable due to leakage or any other defects, although originally accepted, the contractor shall repair or replace the affected portion at no cost to the Town. It is understood that if the contractor fails to do such work as required, the contractor shall be responsible for said costs of repair or replacement.
- B. The CONTRACTOR shall make all necessary repairs and replacements to remedy, in a manner mutually agreed, and at no cost to the OWNER, of any and all defects, breaks, or failures of the Work occurring within one (1) year following the date of acceptance of the Work due to faulty or inadequate materials or workmanship.

1.7 SAFETY

- A. The CONTRACTOR's personnel shall have OSHA confined space entry training. The confined space entry shall be in accordance with the requirements and protocol as specified in 29 CFR 1910.146, Permit Required Confined Spaces, and ASTM D 4276-84.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Service lateral connections may be a combination of tee's, wye's or break-in taps of varying sized and angle from 30 to 90 degrees and may include over-cut lateral openings, pilot holes or defects in relined sewer pipe.
- B. The resin shall be rapidly cured to transform the flexible insert into a hard, impermeable seal around the main pipe and in the lateral connection. The Liner shall extend from the mainline into the lateral connection in a continuous tight fitting, watertight pipe-within-a-pipe to eliminate any visible ground water leakage and future root growth at the lateral to mainline connection..

- C. The finished CIP Lateral Liner shall have a one piece 360 degree full wrap main CIP Liner with an integral lateral connection CIP Liner that extends into the lateral a maximum of 24 inches.
- D. The CIPP lateral and lateral-to-main connection Liner repair system shall be as manufactured by Trelleborg – EPROS; Liner Products LLC; BLD “Service Connection Seal + Lateral” of BLD Services, LLC; or approved equal.
- E. The rehabilitation shall be accomplished using a non-woven textile tube of particular length and a thermo-set resin with physical and chemical properties appropriate for the application. The lateral tube located within an inversion bladder is impregnated with the resin and is then placed inside of a protective carrying device.
- F. The mainline portion of the Liner is physically attached to the lateral portion and is affixed around a launching device. When the launching device is properly positioned at the lateral connection, the mainline bladder is inflated by pressurized air that presses the main Liner against the host pipe. The lateral portion is then inverted up through the service lateral by the action of the inversion bladder. Once the resin-saturated Liner is cured, the inversion bladder and launching/carrying devices are removed.
- G. Curing:
 - 1. In most circumstances, an accelerated ambient-temperature curing resin system will be utilized. If a heat cure is required, the Contractor shall supply a suitable heat source and recirculation equipment. The equipment shall be capable of delivering the approved heating medium throughout the section to the temperature required to affect a cure of the resin. This temperature shall be determined by the resin/catalyst system employed.
 - 2. If a heat cure is required, the heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing air/steam or water supply.
 - 3. Initial cure shall be deemed to be completed when inspection of the exposed portions of the CIPP appears to be hard and sound and/or the temperature gauge indicates that the temperature is of a magnitude to realize an exotherm. The cure period shall be of a duration recommended by the resin manufacturer, as modified for the installation process.
 - 4. Cool-down: The Contractor shall cool the hardened CIPP to a temperature below 100°F before relieving the pressure in the pressure apparatus. Care shall be taken to maintain proper pressure throughout the cure and cool-down period.

H. Material:

- 1. Materials as specified by NASSCO Standard Specifications for CIP lateral lining.

2. The Liner assembly shall be continuous in length and consist of one or more layers of absorbent textile material that meets the requirements of ASTM F1216 and ASTM 05813. The textile shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe segments, and flexibility to fit irregular pipe sections.
3. The wet-out textile shall meet ASTM F1216 and shall have uniform thickness and 5% to 10% excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.
4. The mainsheet and lateral tube shall be a one-piece assembly formed in the shape of a "T" or WYE. No intermediate or encapsulated elastomeric layers shall be in the textile that may cause de-lamination in the cured in place pipe.
5. The lateral tube will be capable of conforming to offset joints, bells, and disfigured pipe sections.

I. Resin System:

1. The resin/liner system shall conform to ASTM D5813 Section 8.2.2 - 10,000-hour test.
2. The resin shall be a corrosion resistant polyester, vinyl ester, epoxy or silicate resin and catalyst system that when properly cured within the composite liner assembly, meets the requirements of ASTM F1216, the physical properties herein, and those which are to be utilized in the design of the CIPP, for this project.
3. The finished Liner shall be chemically resistant to domestic sewage over the expected lifetime of the rehabilitated pipe.
4. The Liner shall be compatible with the lining system utilized for the main and/or lateral sewer lines.

2.2 STRUCTURAL REQUIREMENTS

- A. The CIP shall be designated as per ASTM F1216, designed to have sufficient strength to handle dead loads, live loads, and groundwater load imposed, assuming fully deteriorated host pipe conditions.
- B. The cured Liner shall conform to the minimum standard listed below:
 1. Flexural Modulus of Elasticity: ASTM D790; 250,000 psi minimum
 2. Flexural Strength: ASTM D790; 4,500 psi minimum
- C. Refer to Section 02764 – CURED-IN-PLACE PIPE (CIPP) for further requirements.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prior to installing the CIPP Liner, the area around the lateral sealing surface in both the main and lateral shall be inspected. Waste product build-up, hard scale, roots, lateral cutting debris or resin slugs must be removed using high-pressure water jetting or in-line cutters.
- B. Break-in connection and/or lateral pipe protruding into the mains shall be ground back to no more than a 1/8-inch protrusion into the mainline.
- C. Built-up deposits on the main and lateral pipe walls shall be removed. The removal shall reach at least one foot beyond the Liner to allow the bladder to inflate tightly against the pipe walls ensuring a smooth transition from Liner to the existing pipe wall.
- D. In relined pipes, the lateral must be opened 95 percent or more and edges finished without "teeth". Over-cuts shall not exceed one inch beyond the internal diameter of the lateral.
- E. The contractor shall be responsible for bypassing of sewage during the installation of the Liner, if needed.

3.2. SERVICE LATERAL CONNECTIONS

- A. The resin impregnated Liner shall be loaded on the applicator apparatus, attached to a robotic device and positioned in the mainline pipe at the service lateral connection that is to be rehabilitated. The robotic device together with a video camera shall be used to align the LINER repair product with the service connection opening. Air pressure, supplied to the applicator through an air hose, shall be used to insert the resin impregnated Liner into the lateral pipe. The inserted Liner will then be inspected using a video camera to confirm the Liner is correctly positioned and centered in the service lateral opening prior to curing. The insertion pressure will be adjusted to fully deploy the Liner into the lateral connection and hold the Liner tight to the main and lateral pipe walls.
- B. The pressure apparatus shall include a bladder of sufficient length in both the main and lateral lines such that the inflated bladder extends beyond the ends of both the lateral tube and main line segments of the Liner, pressing the end edges flat against the internal pipe wall and forming a smooth transition from the Liner to pipe diameters without a step, ridge or gap between the Liner and the inner diameters of the lateral and mainline pipes.
- C. After insertion is completed, recommended pressure must be maintained on the impregnated Liner for the duration of the curing process.

- D. The packer is then deflated, removed from connection and returned to the manhole to repeat the cycle.
- E. The finished Liner shall be free of dry spots, lifts and delamination. The installed Liner should not inhibit the post installation video inspection, using a closed circuit television camera, of the mainline and service lateral pipes or future pipe cleaning operations.
- F. After the work is completed, the contractor will provide the Town with an electronic photographs and recorded data identifying the location and showing the completed work and restored condition of all the rehabilitated service lateral connections.
- G. During the warranty period, any defects with the Liner that affect the performance or cleaning of the lateral connection shall be repaired at the CONTRACTOR'S expense in a manner acceptable to the OWNER.

3.3. INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS

- A. It shall be the responsibility of the CONTRACTOR to confirm the location of all designated manhole access points that shall be open and accessible for the Work and provide rights of access to these points. If a street must be closed to traffic because of the orientation of the sewer, the OWNER shall institute the actions necessary to do this for the mutually agreed time period. The CONTRACTOR shall provide a traffic management plan and neighborhood communication plan for OWNER's review prior to commencement of Work.
- B. Line Obstructions - It shall be the responsibility of the CONTRACTOR to clear the line of obstructions such as solids, protruding reinforcement and roots that will prevent the insertion of CIP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the insertion process, and it cannot be removed by conventional sewer cleaning, cutting, or grinder equipment, then the CONTRACTOR shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the OWNER's representative prior to the commencement of the Work and shall be considered as a separate pay item.
- C. The CONTRACTOR shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be temporarily out of service, the maximum amount of time of no service shall be 18 hours for any property served by the sewer. The CONTRACTOR shall be required to notify the OWNER and all affected properties whose service laterals will be out of commission and to advise against water usage until the sewer main is back in service. Such notification shall be provided to the OWNER at least one week prior to service disconnecting.
- D. The CONTRACTOR shall also provide the following:

1. Written notice to be delivered to each home or business describing the Work, schedule, how it affects them, and a local telephone number of the CONTRACTOR they can call to discuss the project or any problems that could arise.
 2. Personal contact and attempted written notice the day prior to the beginning of Work being conducted on the section relative to the residents affected.
 3. Personal contact with any home or business that cannot be reconnected within the time stated in the written notice.
- E. The CONTRACTOR shall be responsible for confirming the locations of service connections. The OWNER will dictate whether or not service connections will be reinstated. The OWNER will provide written authorization of service connections to be reinstated. If no such direction is provided, visibly uncapped services will be reinstated.

3.4. WARRANTY TESTING

- A. Prior to the expiration of the warranty period during a period of high groundwater as determined by the ENGINEER, 100% of all Service Lateral Liners shall be inspected prior to final payment.
- B. Finished pipe shall be continuous through the applied areas, true to line and grade, with no visual bulges, sags, protrusions, deflections, offset joints, leaking joints, wrinkles, dry spots, or other visible infiltration, or other defects that would impair the intended use of the completed pipeline.
- C. Any repairs necessary, as determined by the ENGINEER, as a result of this inspection shall be performed by the CONTRACTOR.
- D. Final acceptance of rehabilitation Work shall not be granted until all defective areas are repaired to the ENGINEER's satisfaction.

3.5. CLEAN-UP

- A. Upon acceptance of the Work and testing, the CONTRACTOR shall restore the project area affected by the operations to a condition at least equal to that existing prior to the Work.

END OF SECTION 02765

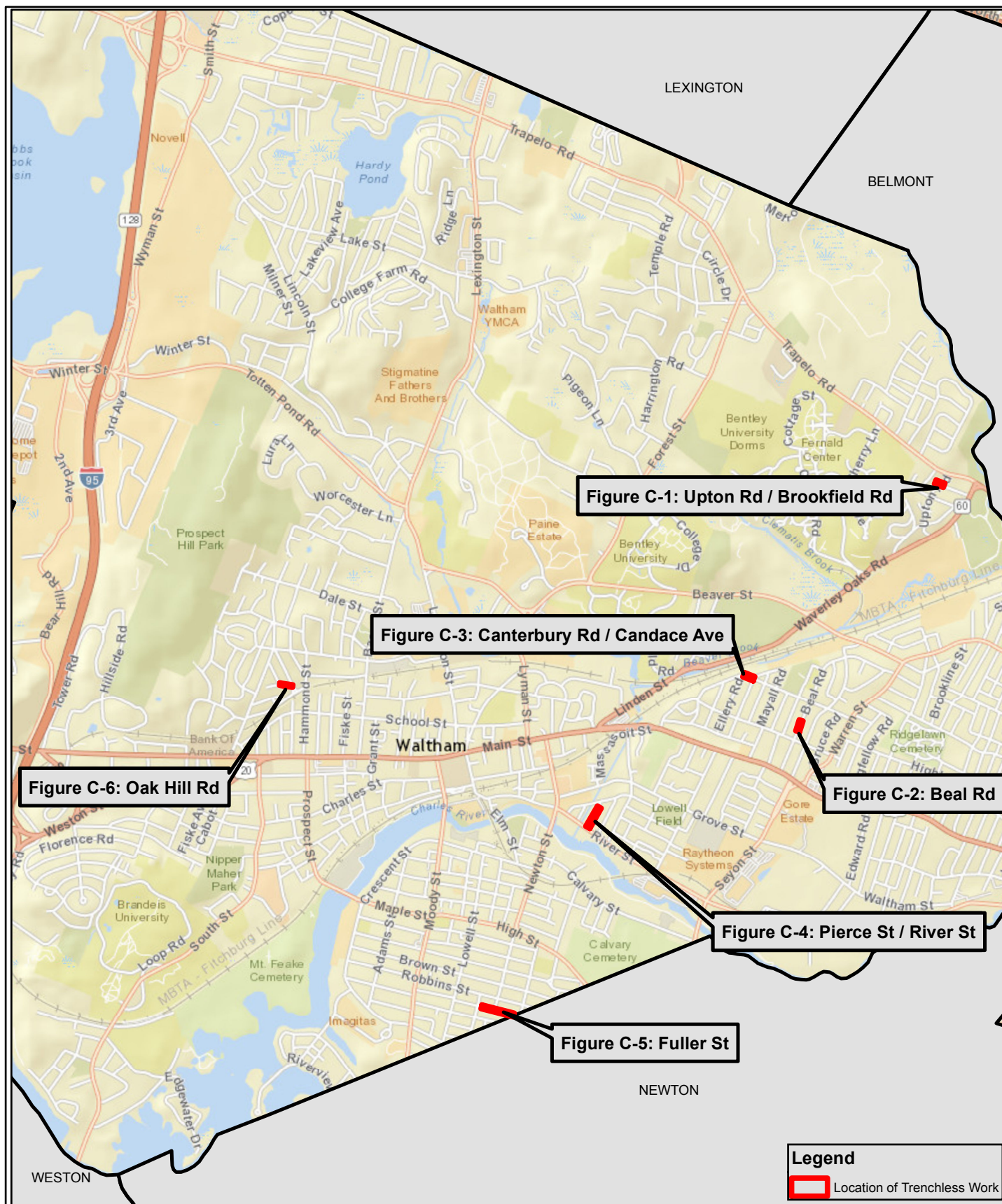
APPENDIX A
IDDE Work Package Figures

Total of 8 Sheets

- G-1: General Notes
- G-2: Locus Map
- C-1: Upton Rd / Brookfield Rd
- C-2: Beal Rd
- C-3: Canterbury Rd / Candace Ave
- C-4: Pierce St / River St
- C-5: Fuller St
- C-6: Oak Hill Road

GENERAL & CONSTRUCTION NOTES:

- 1) DRAWINGS ARE BASED ON CITY OF WALTHAM GIS DATABASE. COMPLETENESS AND CORRECTNESS OF UTILITY LOCATIONS AND CONNECTIVITY ARE NOT GUARANTEED.
- 2) THE CONTRACTOR SHALL RESTORE ALL PUBLIC AND PRIVATE PROPERTY TO ITS PRE-CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- 3) ALL EXISTING WATER, SEWER, AND DRAIN LINES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE.
- 4) ABBREVIATIONS: VC = VITRIFIED CLAY; CIPP = CURED-IN-PLACE PIPE
- 5) DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSION AND STATIONING SHALL PREVAIL. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. REFER TO CCTV INSPECTION RECORDS IN APPENDIX FOR ADDITIONAL INFORMATION.
- 6) THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR WORK IN ROADWAYS. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL PERMITS AS AN INTEGRAL PART OF HIS WORK.
- 7) CONTRACTOR TO FIELD VERIFY WORK AREA CONDITIONS PRIOR TO THE START OF CONSTRUCTION. IF CONDITIONS DIFFER SIGNIFICANTLY FROM PROPOSED PLAN CONTRACTOR TO CONTACT THE CITY AND DESIGN ENGINEER IMMEDIATELY.
- 8) ALL PROPERTY OWNERS TO BE AFFECTED BY THE CLEANING WORK SHALL RECEIVE ADVANCE NOTICE BY THE CONTRACTOR A MINIMUM OF 48 HOURS IN ADVANCE OF THE WORK INCLUDING CONTRACTOR CONTACT INFORMATION.
- 9) A DEBRIS DISPOSAL LOCATION FOR CLEANING OF SEWER AND DRAIN PIPES AND STRUCTURES SHALL BE PROVIDED BY THE CITY OF WALTHAM. TRANSPORTATION OF ALL DEBRIS IS THE RESPONSIBILITY OF THE CONTRACTOR. DISPOSAL OF DEMOLITION DEBRIS (BRICK, MASONRY, MORTAR, ETC) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DISPOSAL OF DEMOLITION DEBRIS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
- 10) DISCHARGES FROM ALL CLEANING ACTIVITIES ARE SUBJECT TO THE APPROVAL OF THE MASSACHUSETTS WATER RESOURCES AUTHORITY (THE AUTHORITY). THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS. ALL COSTS ASSOCIATED WITH MEETING THE AUTHORITY'S REGULATIONS SHALL BE INCURRED BY THE CONTRACTOR. SEE SPECIFICATION SPECIAL PROVISIONS SECTION 01170 FOR ADDITIONAL INFORMATION.
- 11) NO WATER USED FOR LINING ACTIVITIES SHALL BE DISCHARGED INTO THE DRAINAGE SYSTEM.
- 12) NO CHEMICAL TREATMENTS FOR ROOT REMOVAL WILL BE ALLOWED.
- 13) CURED-IN-PLACE PIPE LINERS SHALL BE CUT FLUSH WITH MANHOLE INSIDE WALL.
- 14) LINING OF MANHOLES SHALL BE FROM RIM TO BENCH.



0 1,250 2,500 5,000 Feet

1 in = 2,500 feet

Environmental Partners
A partnership for engineering solutions.

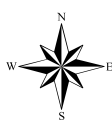
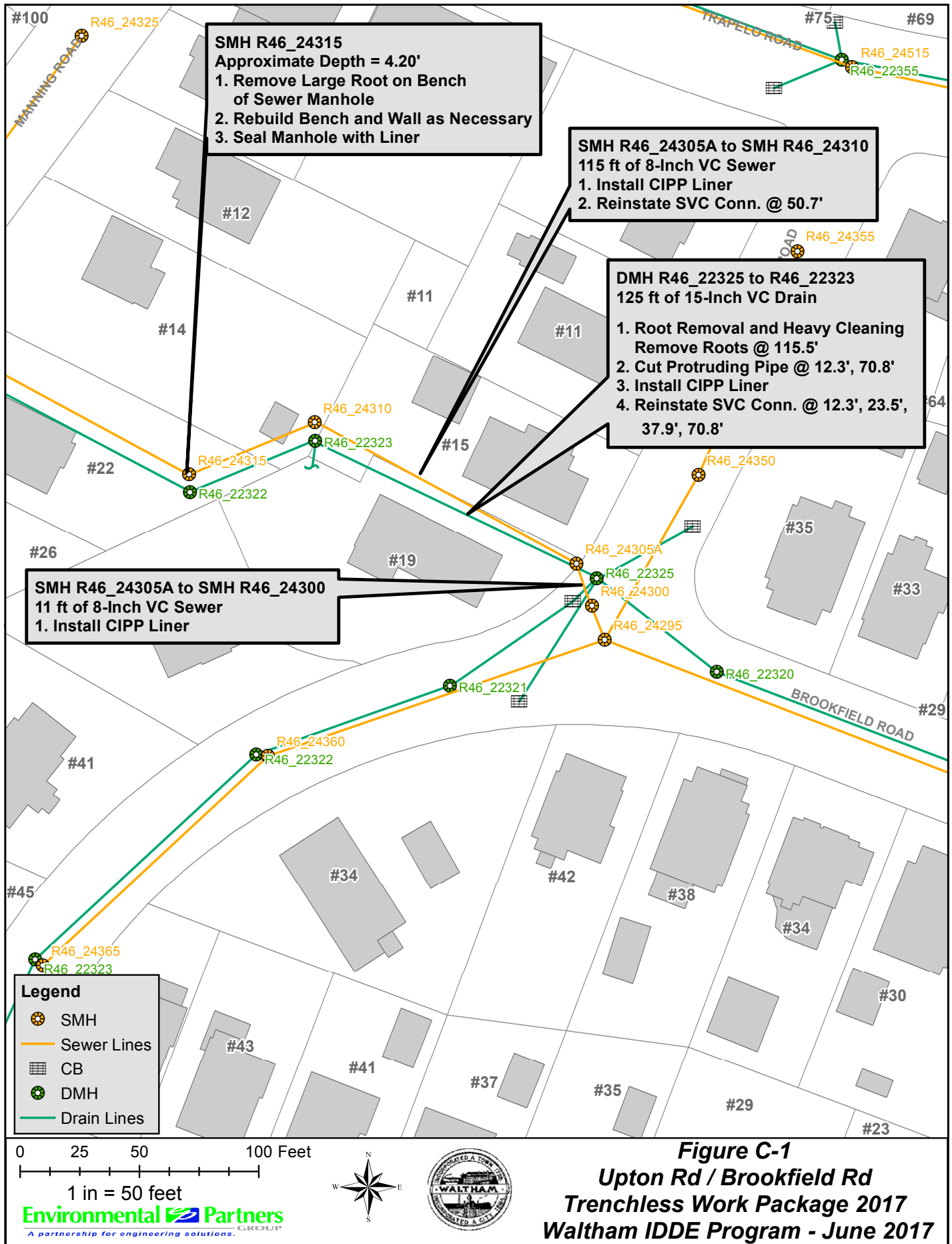
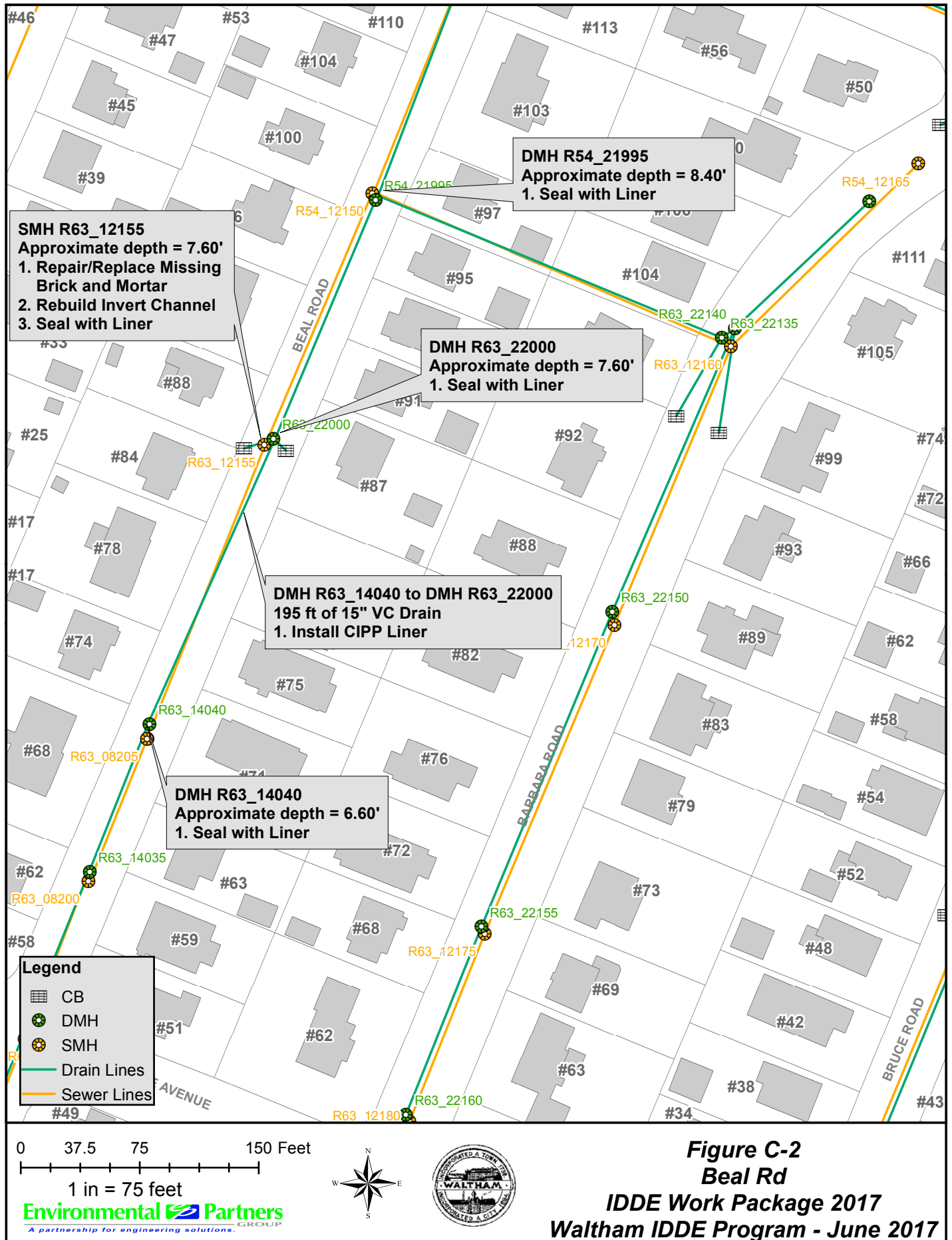
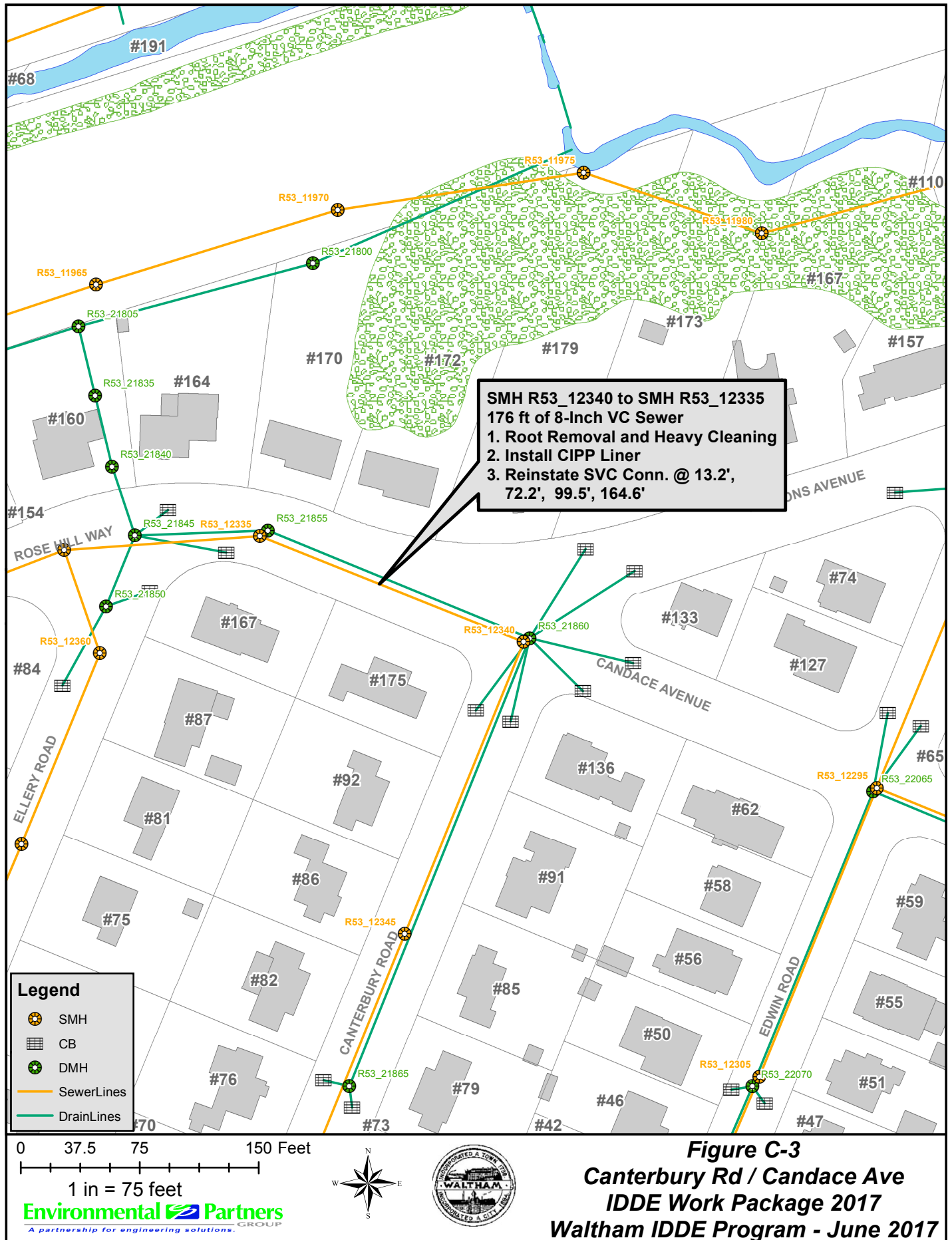
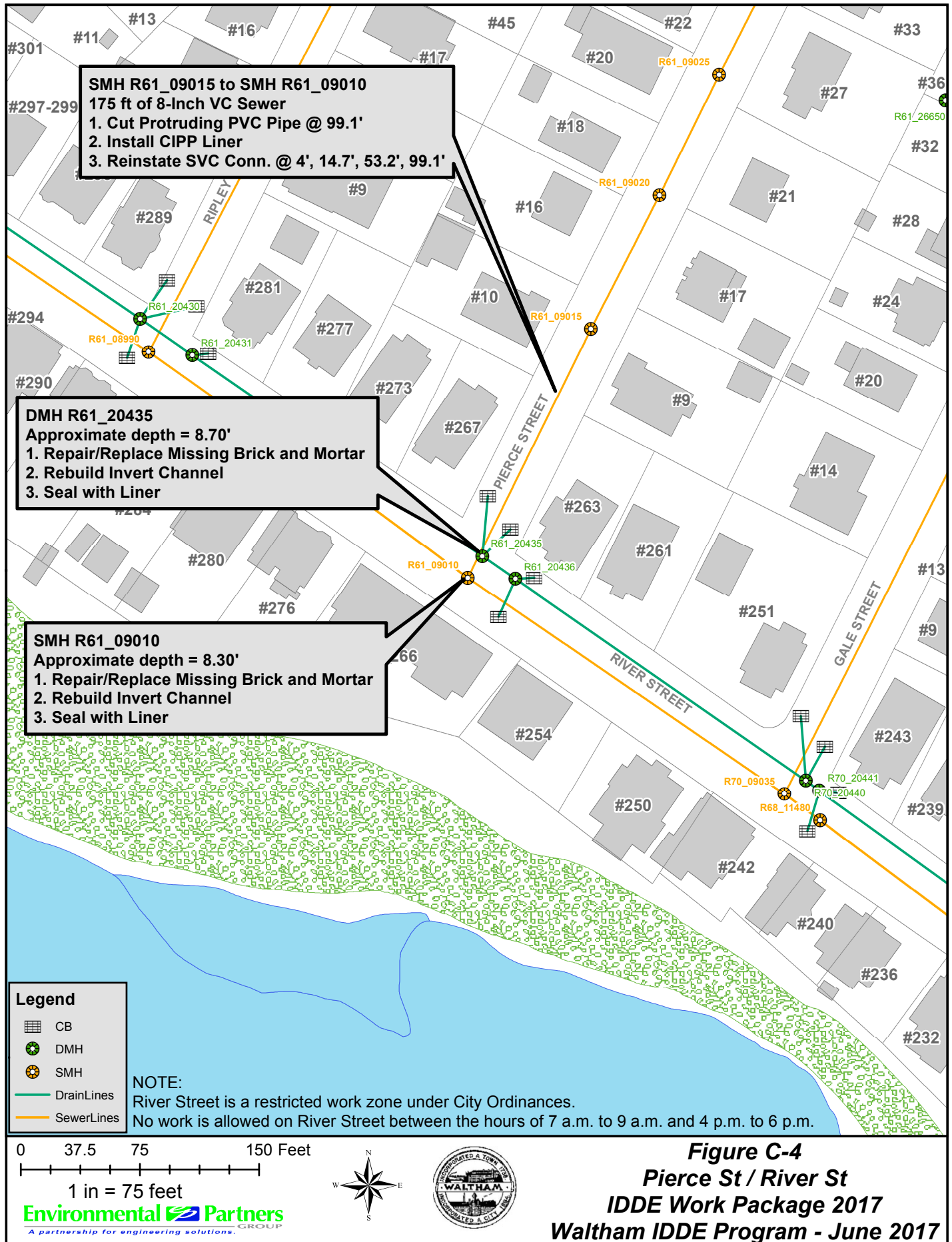


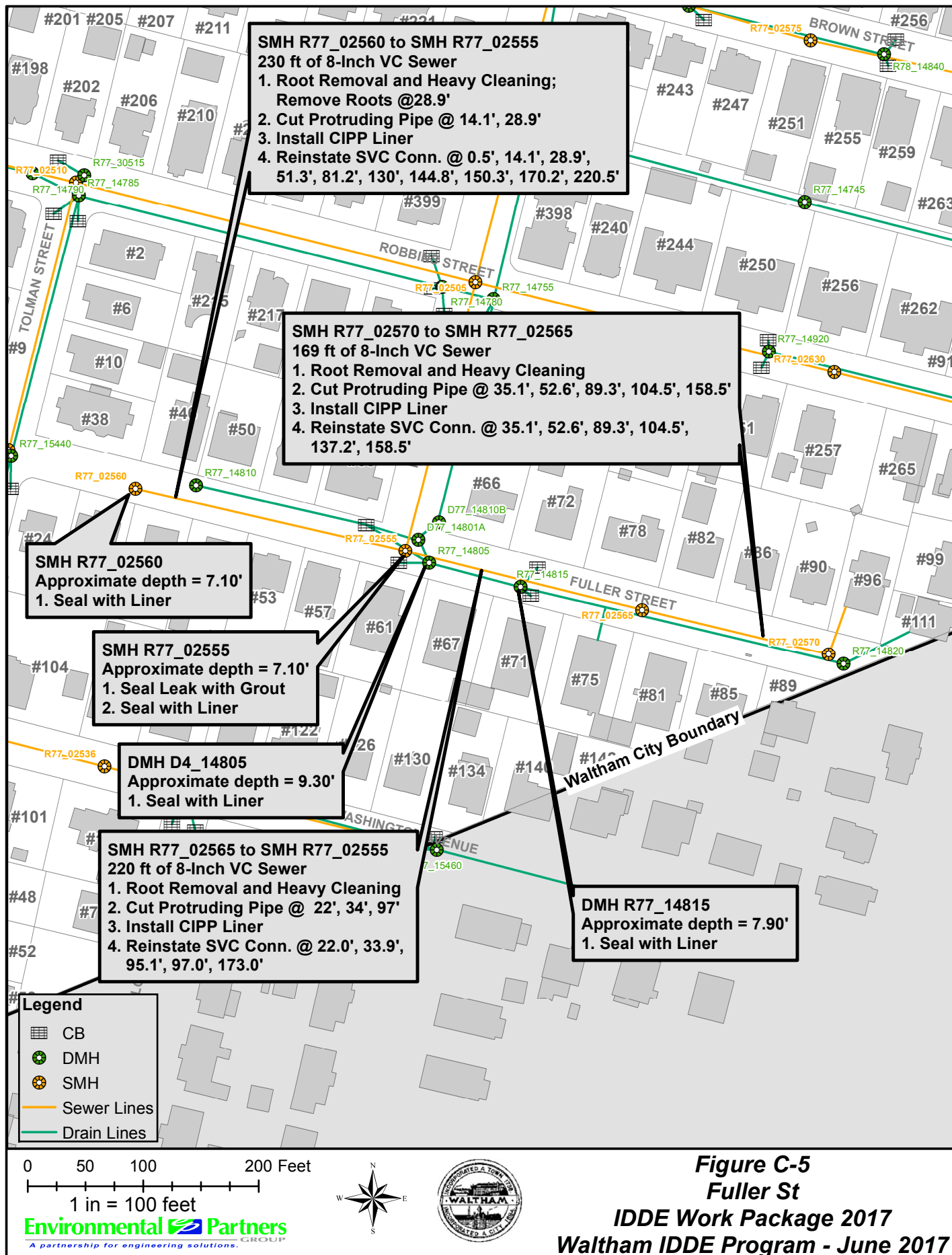
Figure G-2
Locus Map
IDDE Work Package 2017
Waltham IDDE Program - June 2017











APPENDIX B

CCTV Reports

Total of 90 Sheets

- Canterbury Road
- Fuller Street
- Pierce Street – River Street
- Upton Road – Brookfield Road

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Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH R53-12340	SMH R53-12335	Sewer R53-12340	4/1/2015	Candace	Vitrified Clay Pipe	8	176	176

Pipe Size: 8

Total Ln.: 176

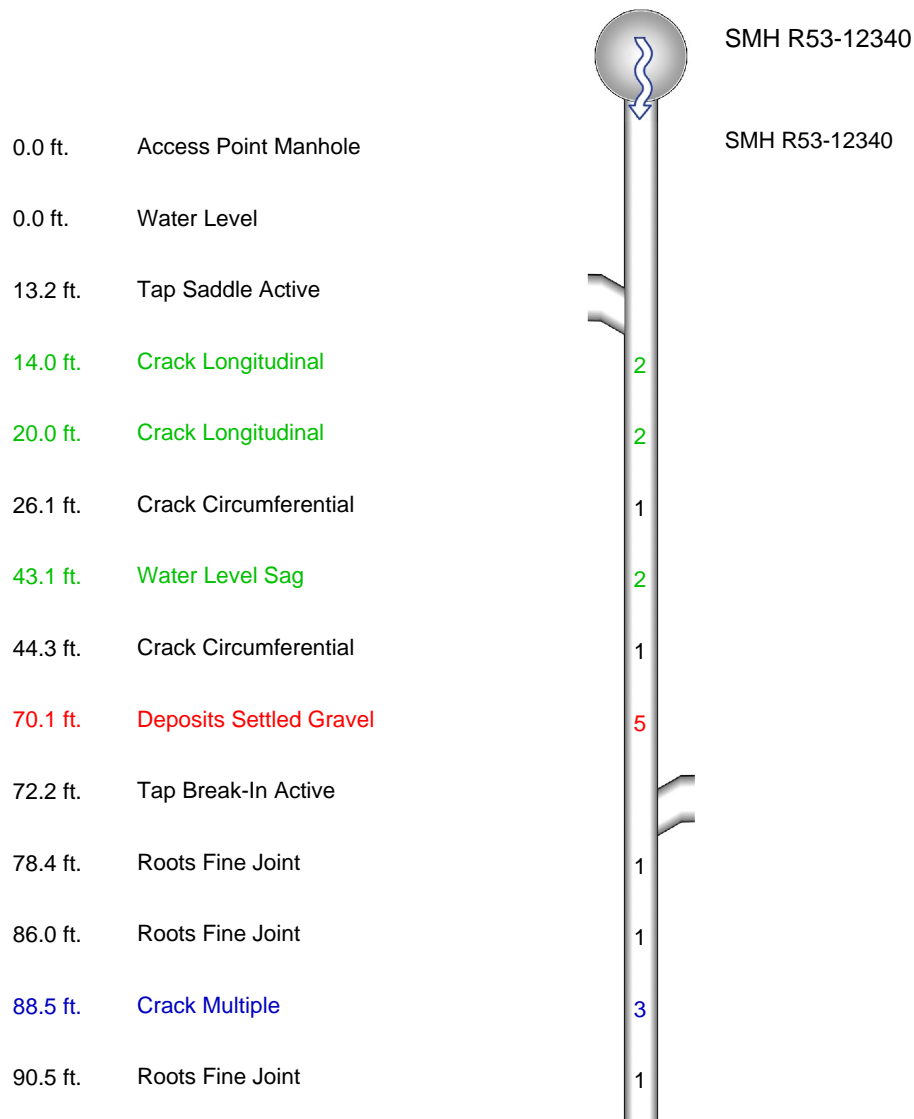
Inspected Ln.: 176

Project Total Ln.: 176.0

Project Inspected Ln.: 176.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3
SPR 12	MPR 16	PO Number		Customer	
SPRI 1.5	MPRI 1.6	Work Order		Environmental Partners	
QSR 3122	QMR 5122			Purpose	
				Infiltration/Inflow Investigat...	
OPR 28	Surveyed By	Direction	Date	Media label	
	D_Messier	Downstream	20150401		
OPRI 1.6	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	10:50	Dry	
Date Cleaned			End Time	Additional Info	
20150401			12:22		



Defect Listing Plot

Pipe Segment Refere...	City	Street	Material		Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe		Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
SMH R53-12340	176		Circular		Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...	
SMH R53-12335	176		8	8	3	

SPR	12	MPR	16	PO Number		Customer	
SPRI	1.5	MPRI	1.6			Environmental Partners	
QSR	3122	QMR	5122	Work Order		Purpose	
						Infiltration/Inflow Investigat...	
OPR		Surveyed By	Direction	Date		Media label	
28		D_Messier	Downstream	20150401			
OPRI		Certificate Number	Pre-Cleaning	Time		Weather	
1.6		U-214-06019237	Jetting	10:50		Dry	
Date Cleaned				End Time		Additional Info	
20150401				12:22			

96.3 ft. Roots Fine Joint

99.5 ft. Tap Break-In Active

100.6 ft. Roots Fine Joint

102.2 ft. Roots Fine Joint

116.1 ft. Roots Fine Joint

125.3 ft. Deposits Settled Gravel

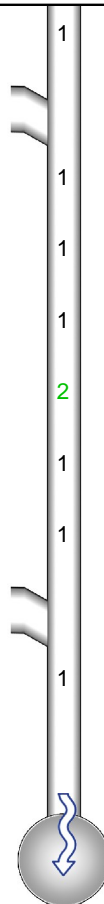
161.6 ft. Crack Circumferential

164.0 ft. Crack Circumferential

164.6 ft. Tap Break-In Active

165.8 ft. Crack Circumferential

176.0 ft. Access Point Manhole



SMH R53-12335

SMH R53-12335



Defect Listing

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3

SPR	12	MPR	16	PO Number	Customer
SPRI	1.5	MPRI	1.6	Work Order	Environmental Partners
QSR	3122	QMR	5122		Purpose
				Infiltration/Inflow Investigat...	
OPR	28	Surveyed By	Direction	Date	Media label
		D_Messier	Downstream	20150401	
OPRI	1.6	Certificate Number	Pre-Cleaning	Time	Weather
		U-214-06019237	Jetting	10:50	Dry
		Date Cleaned		End Time	Additional Info
		20150401		12:22	

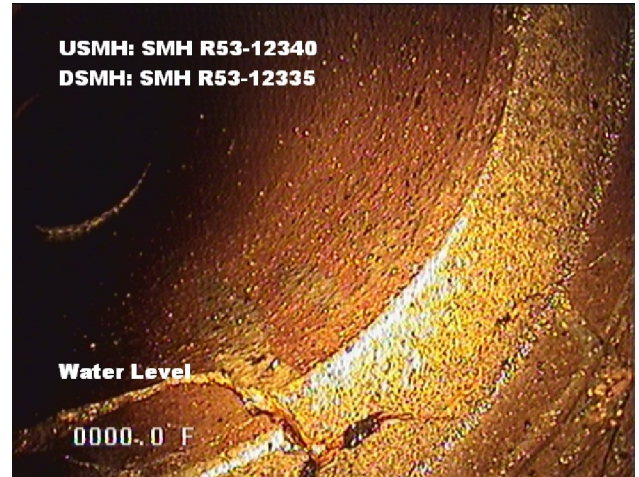
Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R53-12340									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
13.2 ft.	Tap Saddle Active		6			<input type="checkbox"/>	3		
14.0 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	2		2
20.0 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	1		2
26.1 ft.	Crack Circumferential					<input type="checkbox"/>	5	9	1
43.1 ft.	Water Level Sag				15	<input type="checkbox"/>			2
44.3 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	6	1	1
70.1 ft.	Deposits Settled Gravel				50	<input checked="" type="checkbox"/>	3	9	5
72.2 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
78.4 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	2		1
86.0 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	11		1
88.5 ft.	Crack Multiple					<input type="checkbox"/>	12	12	3
90.5 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	9	2	1
96.3 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	10	2	1
99.5 ft.	Tap Break-In Active		6			<input type="checkbox"/>	2		
100.6 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	4		1
102.2 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	12	12	1
116.1 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	3		1
125.3 ft.	Deposits Settled Gravel				10	<input type="checkbox"/>	6		2
161.6 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	5	7	1
164.0 ft.	Crack Circumferential					<input type="checkbox"/>	3	7	1
164.6 ft.	Tap Break-In Active		6			<input type="checkbox"/>	3		
165.8 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	6	7	1
176.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R53-12335									

Image Report 4/Page

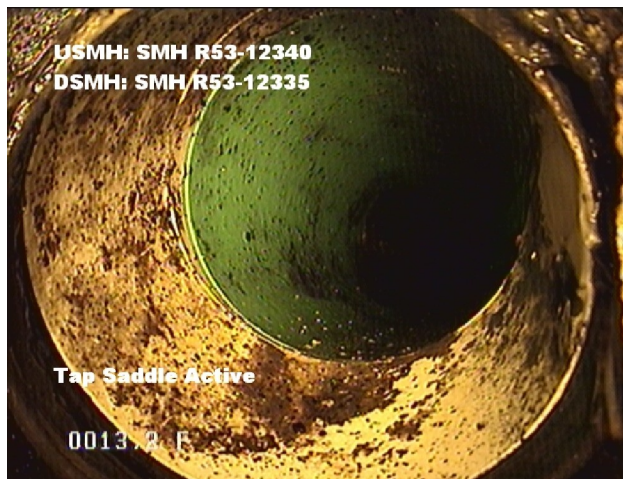
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3



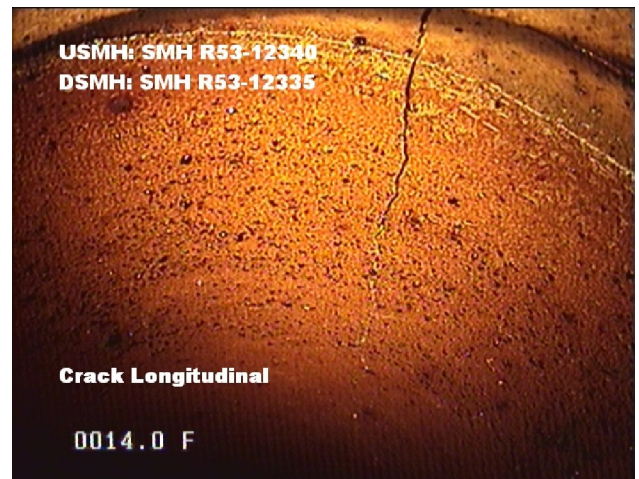
Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R53-12340



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



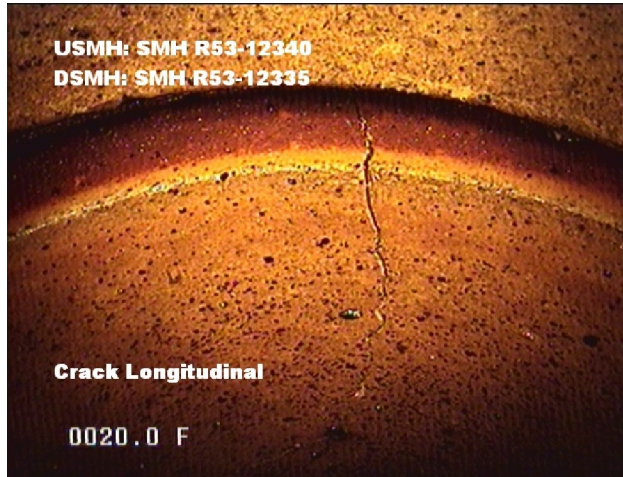
Distance: 13.2 ft. Grade: 0
Condition: Tap Saddle Active
Remarks: N/A



Distance: 14.0 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3



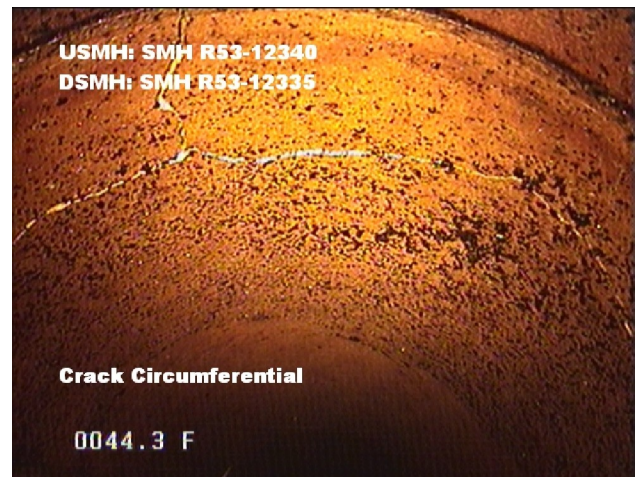
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Condition: Crack Longitudinal
Remarks: N/A



Distance: 26.1 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 43.1 ft. Grade: 2
Condition: Water Level Sag
Remarks: N/A



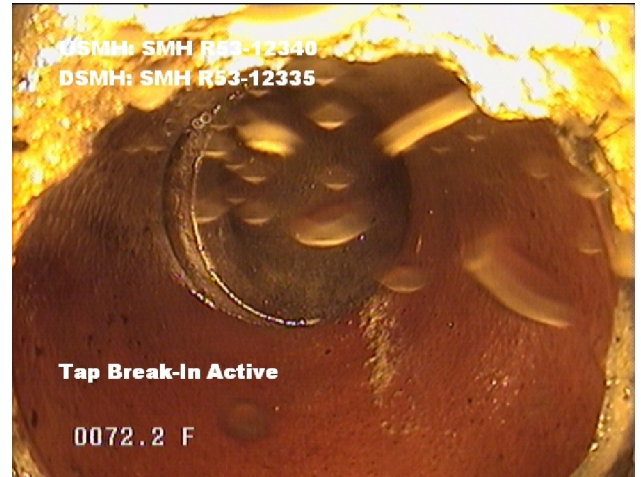
Distance: 44.3 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3



Distance: 70.1 ft. Grade: 5
Condition: Deposits Settled Gravel
Remarks: N/A



Distance: 72.2 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



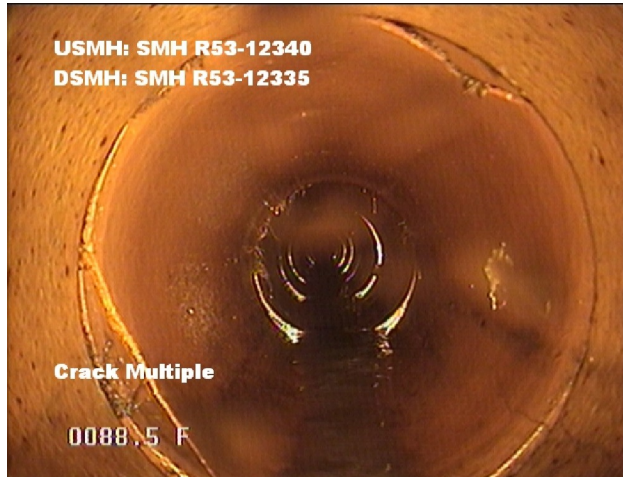
Distance: 78.4 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



Distance: 86.0 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City Waltham Mas	Street Candace	Material Vitrified Clay Pipe		Location C...	Sewer Use
Upstream MH SMH R53-12340	Total Length 176	Year Laid	Shape Circular		Location Details Near #133	
DS Manhole SMH R53-12335	Length surveyed 176	Year Renewed	Height 8	Width 8	Pipe Joint...	
					3	



Distance: 88.5 ft. Grade: 3
Condition: Crack Multiple
Remarks: N/A



Distance: 90.5 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



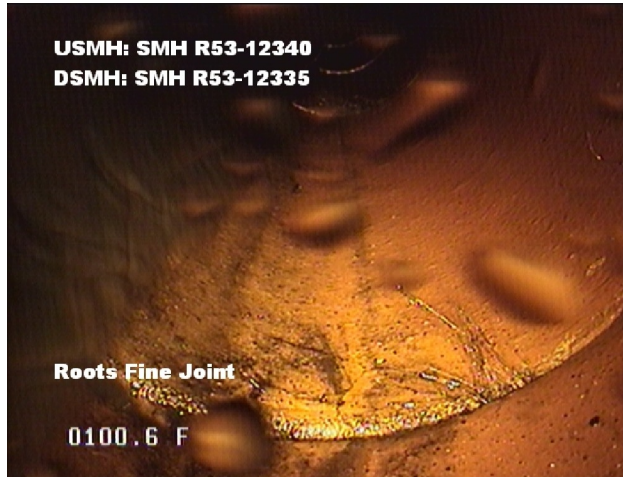
Distance: 96.3 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



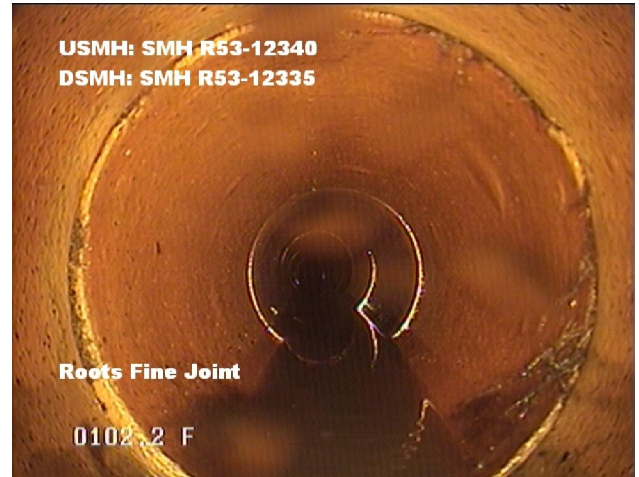
Distance: 99.5 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3



Distance:	100.6 ft.	Grade:	1
Condition:	Roots Fine Joint		
Remarks:	N/A		



Distance:	102.2 ft.	Grade:	1
Condition:	Roots Fine Joint		
Remarks:	N/A		



Distance:	116.1 ft.	Grade:	1
Condition:	Roots Fine Joint		
Remarks:	N/A		



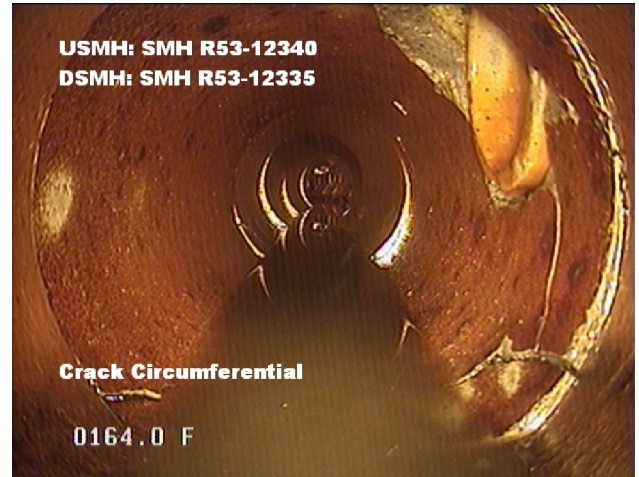
Distance:	125.3 ft.	Grade:	2
Condition:	Deposits Settled Gravel		
Remarks:	N/A		

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3



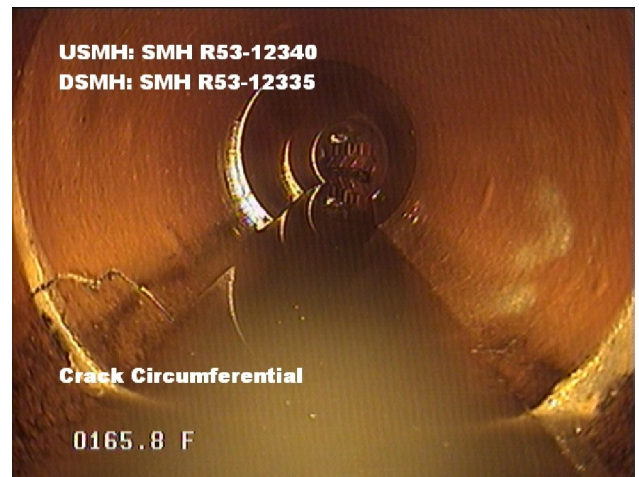
Distance: 161.6 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 164.0 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 164.6 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 165.8 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R53-12340	Waltham Mas	Candace	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R53-12340	176		Circular	Near #133	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R53-12335	176		8	8	3



Distance:	176.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	SMH R53-12335		



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTEAL PARTNERS GROUP.INC WALTHAM WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
DMH R77-14820	DMH R77-14815	Drain R77-14815	3/30/2015	Fuller Street	Vitrified Clay Pipe	10	284	284

Pipe Size: 10

Total Ln.: 284

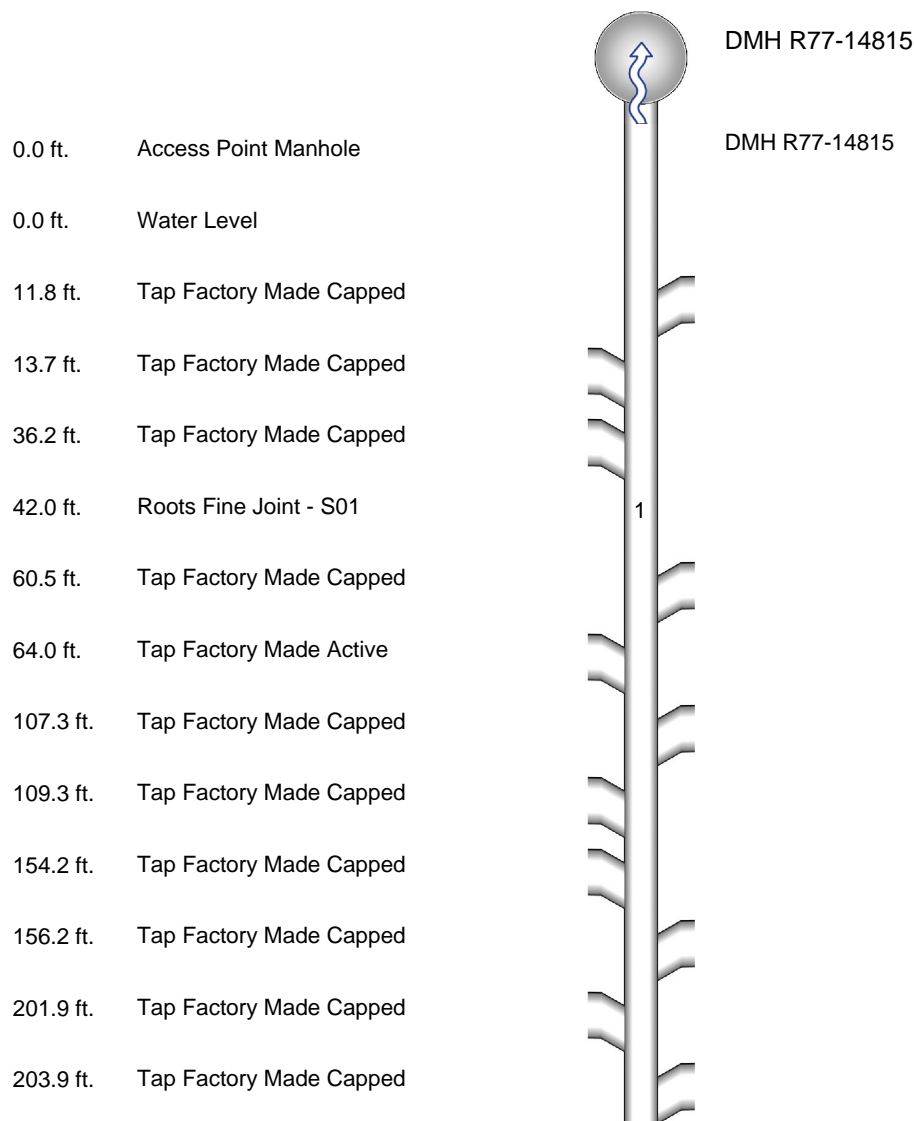
Inspected Ln.: 284

Project Total Ln.: 284.0

Project Inspected Ln.: 284.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2
SPR	N/A	MPR	48	PO Number	
SPRI	N/A	MPRI	1	Customer	
QSR	N/A	QMR	1H00	Work Order	
				Environmental Partners . Inc	
				Purpose	
				Infiltration/Inflow Investigat...	
OPR		Surveyed By	Direction	Date	Media label
48		D_Messier	Upstream	20150330	
OPRI		Certificate Number	Pre-Cleaning	Time	Weather
1		U-214-06019237	No Pre-Cleaning	12:44	Snow
		Date Cleaned	End Time	Additional Info	
			13:00		





Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2
SPR	N/A	MPR	48	PO Number	
SPRI	N/A	MPRI	1	Customer	
QSR	N/A	QMR	1H00	Work Order	
				Environmental Partners . Inc	
				Purpose	
				Infiltration/Inflow Investigat...	
OPR	Surveyed By	Direction	Date	Media label	
48	D_Messier	Upstream	20150330		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
1	U-214-06019237	No Pre-Cleaning	12:44	Snow	
Date Cleaned			End Time	Additional Info	
			13:00		

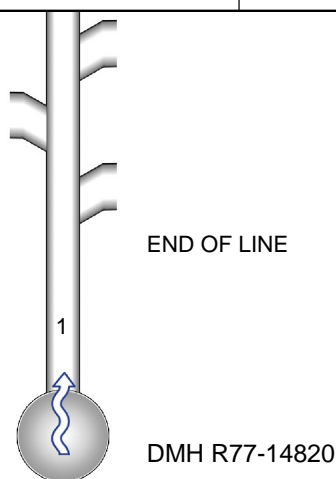
252.8 ft. Tap Factory Made Capped

254.8 ft. Tap Factory Made Capped

283.9 ft. Tap Factory Made Active

284.0 ft. Access Point Manhole

284.0 ft. Roots Fine Joint - F01





Defect Listing

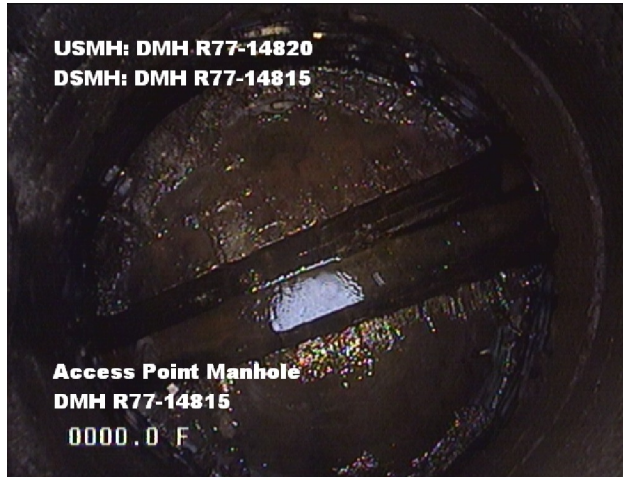
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2

SPR	N/A	MPR	48	PO Number	Customer
SPRI	N/A	MPRI	1	Work Order	Environmental Partners . Inc
QSR	N/A	QMR	1H00		Purpose
				Infiltration/Inflow Investigat...	
OPR	Surveyed By	Direction	Date	Media label	
48	D_Messier	Upstream	20150330		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
1	U-214-06019237	No Pre-Cleaning	12:44	Snow	
Date Cleaned			End Time	Additional Info	
			13:00		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: DMH R77-14815									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
11.8 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
13.7 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
36.2 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
42.0 ft.	Roots Fine Joint	S01				<input checked="" type="checkbox"/>	12	12	1
60.5 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
64.0 ft.	Tap Factory Made Active		6			<input type="checkbox"/>	3		
107.3 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
109.3 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
154.2 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
156.2 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
201.9 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
203.9 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
252.8 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
254.8 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
283.9 ft.	Tap Factory Made Active		6			<input type="checkbox"/>	9		
284.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: END OF LINE									
284.0 ft.	Roots Fine Joint	F01				<input checked="" type="checkbox"/>	12	12	1

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2



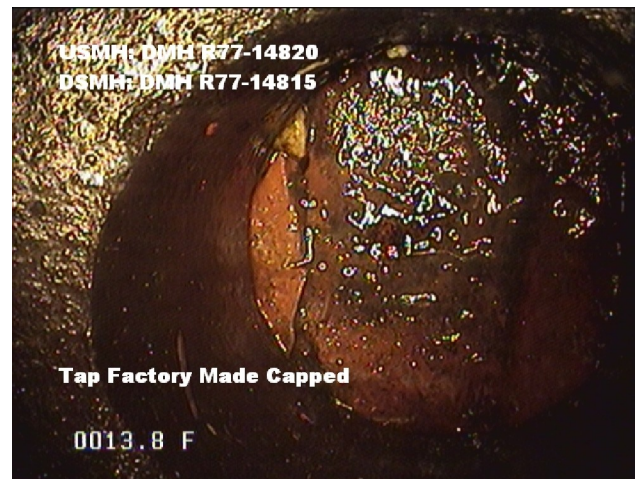
Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: DMH R77-14815



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



Distance: 11.8 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 13.7 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2



Distance: 36.2 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 42.0 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



Distance: 60.5 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 64.0 ft. Grade: 0
Condition: Tap Factory Made Active
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2



Distance: 107.3 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 109.3 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 154.2 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 156.2 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R77-14815	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
DMH R77-14820	284		Circular	In front of #71	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
DMH R77-14815	284		10	10	2



Distance: 201.9 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 203.9 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 252.8 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 254.8 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere... Drain R77-14815	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Stormwater
Upstream MH DMH R77-14820	Total Length 284	Year Laid	Shape Circular		Location Details In front of #71	
DS Manhole DMH R77-14815	Length surveyed 284	Year Renewed	Height 10	Width 10	Pipe Joint... 2	



Distance: 283.9 ft. Grade: 0
Condition: Tap Factory Made Active
Remarks: N/A



Distance: 284.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: END OF LINE



Distance: 284.0 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15							
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp	
R77-02560	R77-02555	Sewer R77-02560	3/30/2015	Fuller Street	Vitrified Clay Pipe	8	230	230	

Pipe Size: 8

Total Ln.: 230

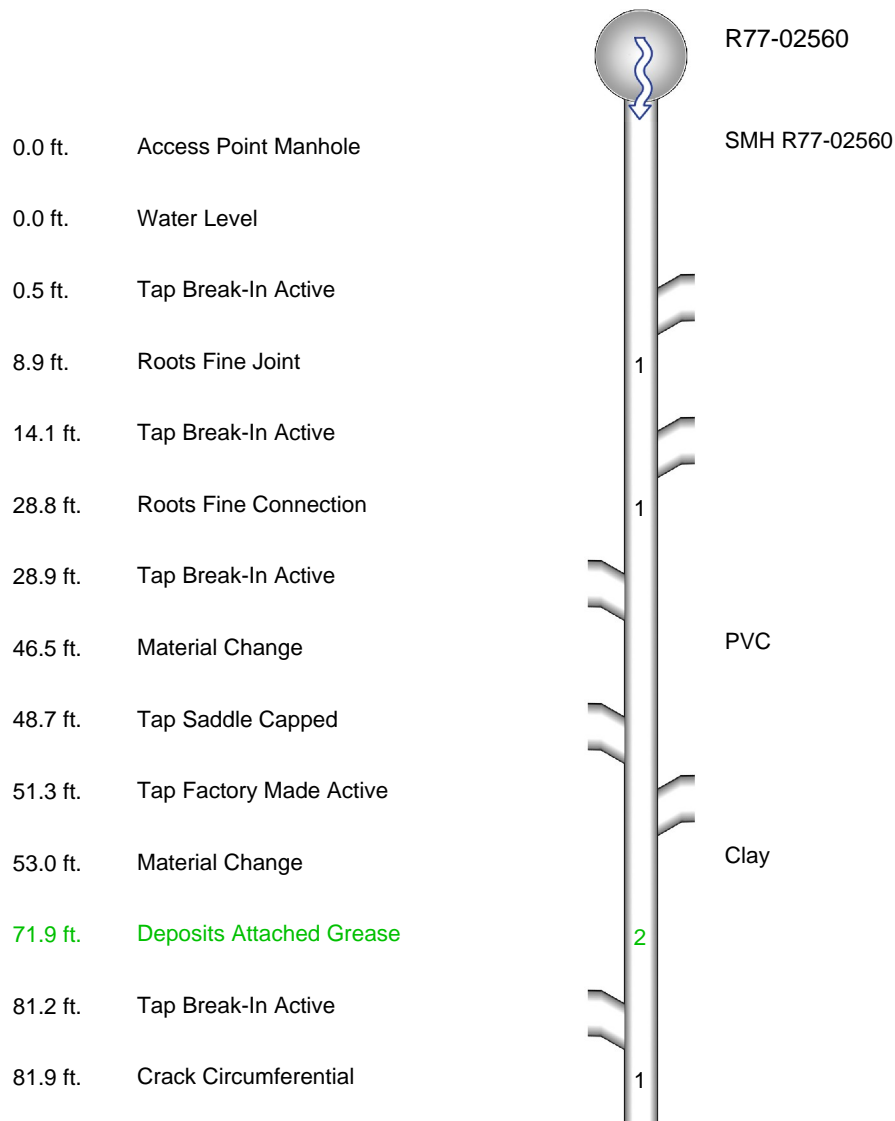
Inspected Ln.: 230

Project Total Ln.: 230.0

Project Inspected Ln.: 230.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2
SPR 3	MPR 68	PO Number		Customer	
SPRI 1.5	MPRI 2	Work Order		Environmental Partners	
QSR 2111	QMR 412E			Purpose Infiltration/Inflow Investigat...	
OPR 71	Surveyed By D_Messier	Direction Downstream	Date 20150330	Media label	
OPRI 2	Certificate Number U-214-06019237	Pre-Cleaning Heavy Cleaning	Time 10:37	Weather Snow	
Date Cleaned 20150330			End Time 10:58	Additional Info	



Defect Listing Plot

Pipe Segment Refere... Sewer R77-02560	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe	Location C... Main Highw...	Sewer Use Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2
SPR 3	MPR 68	PO Number		Customer	
SPRI 1.5	MPRI 2	Work Order		Environmental Partners	
QSR 2111	QMR 412E			Purpose Infiltration/Inflow Investigat...	
OPR 71	Surveyed By D_Messier	Direction Downstream	Date 20150330	Media label	
OPRI 2	Certificate Number U-214-06019237	Pre-Cleaning Heavy Cleaning	Time 10:37	Weather Snow	
Date Cleaned 20150330			End Time 10:58	Additional Info	





Defect Listing

Pipe Segment Refere... Sewer R77-02560	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe	Location C... Main Highw...	Sewer Use Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2

SPR 3	MPR 68	PO Number		Customer	
SPRI 1.5	MPRI 2	Work Order		Environmental Partners	
QSR 2111	QMR 412E			Purpose Infiltration/Inflow Investigat...	
OPR 71	Surveyed By D_Messier	Direction Downstream	Date 20150330	Media label	
OPRI 2	Certificate Number U-214-06019237	Pre-Cleaning Heavy Cleaning	Time 10:37	Weather Snow	
Date Cleaned 20150330			End Time 10:58	Additional Info	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R77-02560									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
0.5 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
8.9 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	3		1
14.1 ft.	Tap Break-In Active		6			<input type="checkbox"/>	10		
28.8 ft.	Roots Fine Connection					<input type="checkbox"/>	2		1
28.9 ft.	Tap Break-In Active		6			<input type="checkbox"/>	2		
46.5 ft.	Material Change					<input type="checkbox"/>			
Remarks: PVC									
48.7 ft.	Tap Saddle Capped		6			<input type="checkbox"/>	3		
51.3 ft.	Tap Factory Made Active		6			<input type="checkbox"/>	10		
53.0 ft.	Material Change					<input type="checkbox"/>			
Remarks: Clay									
71.9 ft.	Deposits Attached Grease				0	<input checked="" type="checkbox"/>	12		2
81.2 ft.	Tap Break-In Active		6			<input type="checkbox"/>	2		
81.9 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	7	8	1
83.0 ft.	Deposits Attached Grease				5	<input checked="" type="checkbox"/>	12		2
87.7 ft.	Deposits Attached Grease	S01			5	<input checked="" type="checkbox"/>	9	3	2
130.0 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
144.8 ft.	Tap Break-In Active		6			<input type="checkbox"/>	11		
150.3 ft.	Tap Factory Made Active		6			<input type="checkbox"/>	12		
170.2 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
178.1 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	3		
192.0 ft.	Tap Factory Made Capped		6			<input type="checkbox"/>	9		
201.0 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	7		2
202.8 ft.	Obstacle In Joint				5	<input checked="" type="checkbox"/>	2		2
220.5 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
228.6 ft.	Infiltration Runner					<input checked="" type="checkbox"/>	5		4
230.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R77-02555									
230.0 ft.	Deposits Attached Grease	F01			5	<input type="checkbox"/>	9	3	2

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2



Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R77-02560



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



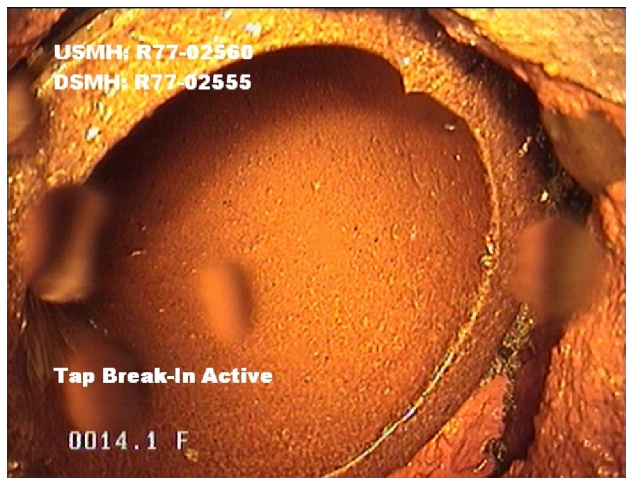
Distance: 0.5 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



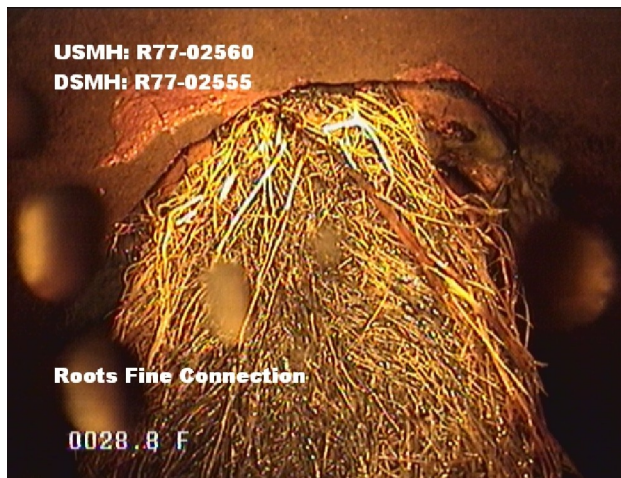
Distance: 8.9 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A

Image Report 4/Page

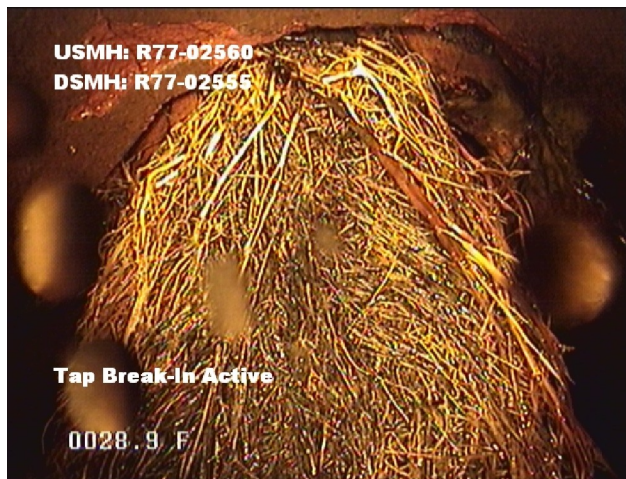
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2



Distance: 14.1 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 28.8 ft. Grade: 1
Condition: Roots Fine Connection
Remarks: N/A



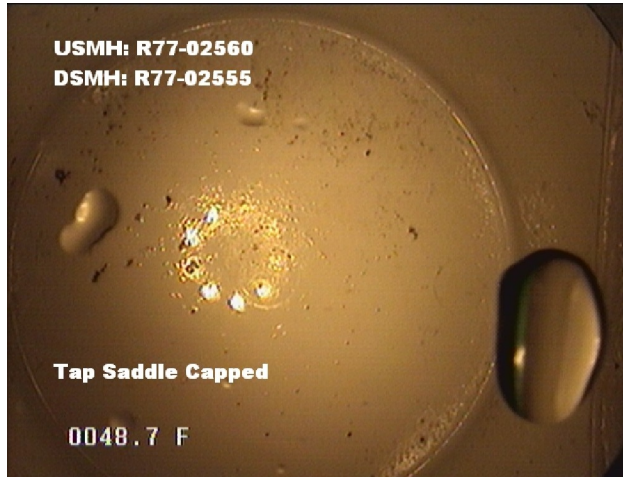
Distance: 28.9 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 46.5 ft. Grade: 0
Condition: Material Change
Remarks: PVC

Image Report 4/Page

Pipe Segment Refere... Sewer R77-02560	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular		Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2	



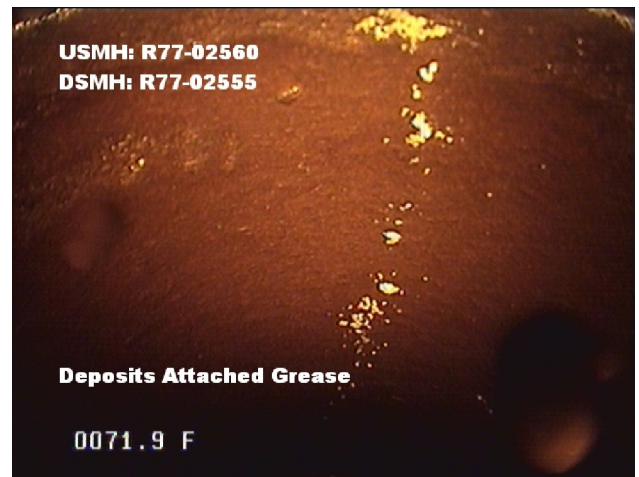
Distance:	48.7 ft.	Grade:	0
Condition:	Tap Saddle Capped		
Remarks:	N/A		



Distance:	51.3 ft.	Grade:	0
Condition:	Tap Factory Made Active		
Remarks:	N/A		



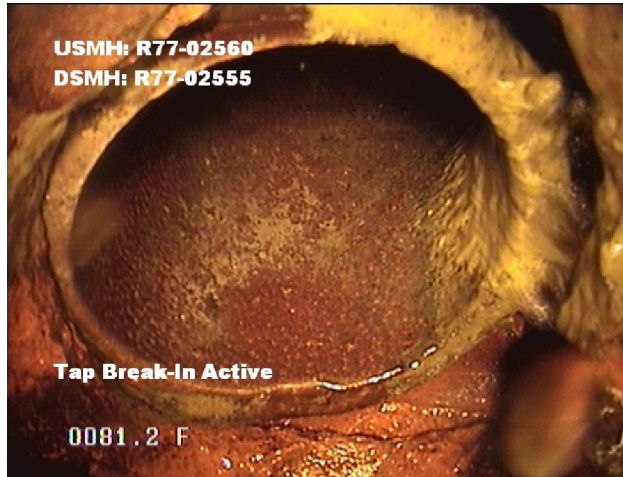
Distance:	53.0 ft.	Grade:	0
Condition:	Material Change		
Remarks:	Clay		



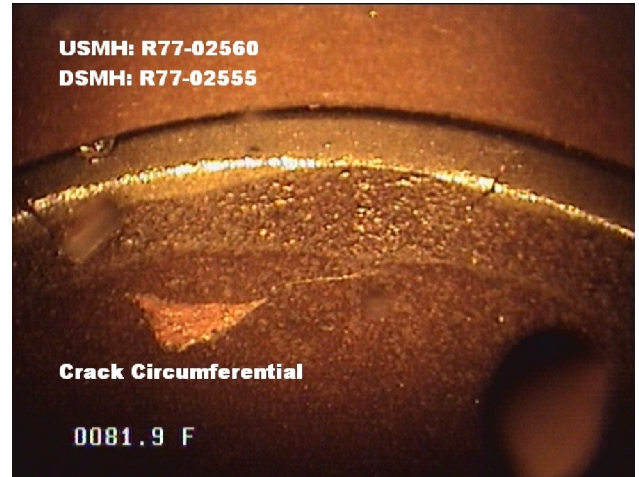
Distance:	71.9 ft.	Grade:	2
Condition:	Deposits Attached Grease		
Remarks:	N/A		

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2



Distance: 81.2 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 81.9 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 83.0 ft. Grade: 2
Condition: Deposits Attached Grease
Remarks: N/A



Distance: 87.7 ft. Grade: 2
Condition: Deposits Attached Grease
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2



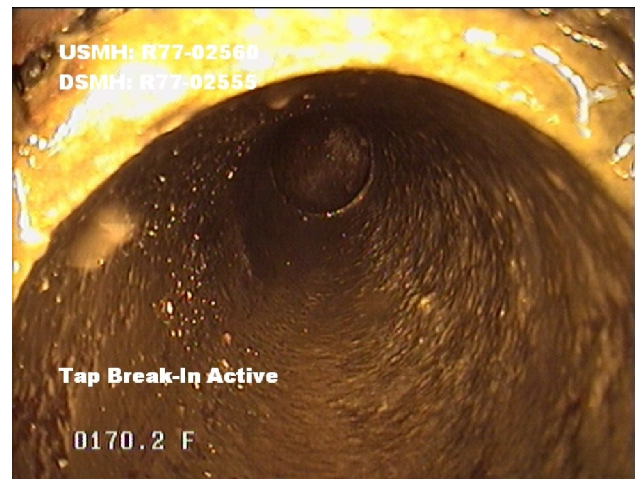
Distance: 130.0 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 144.8 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 150.3 ft. Grade: 0
Condition: Tap Factory Made Active
Remarks: N/A



Distance: 170.2 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2



Distance: 178.1 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



Distance: 192.0 ft. Grade: 0
Condition: Tap Factory Made Capped
Remarks: N/A



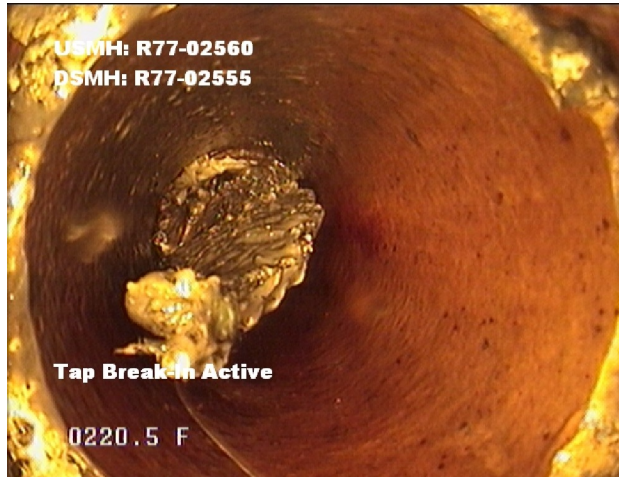
Distance: 201.0 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 202.8 ft. Grade: 2
Condition: Obstacle In Joint
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02560	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH R77-02560	Total Length 230	Year Laid	Shape Circular	Location Details in front of #45	
DS Manhole R77-02555	Length surveyed 230	Year Renewed	Height 8	Width 8	Pipe Joint... 2



Distance: 220.5 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 228.6 ft. Grade: 4
Condition: Infiltration Runner
Remarks: N/A



Distance: 230.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R77-02555



Distance: 230.0 ft. Grade: 2
Condition: Deposits Attached Grease
Remarks: N/A



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH R77-02565	SMH R77-02555	Sewer R77-02565 (rev)	3/30/2015	Fuller Street	Vitrified Clay Pipe	8	220	34

Pipe Size: 8

Total Ln.: 220

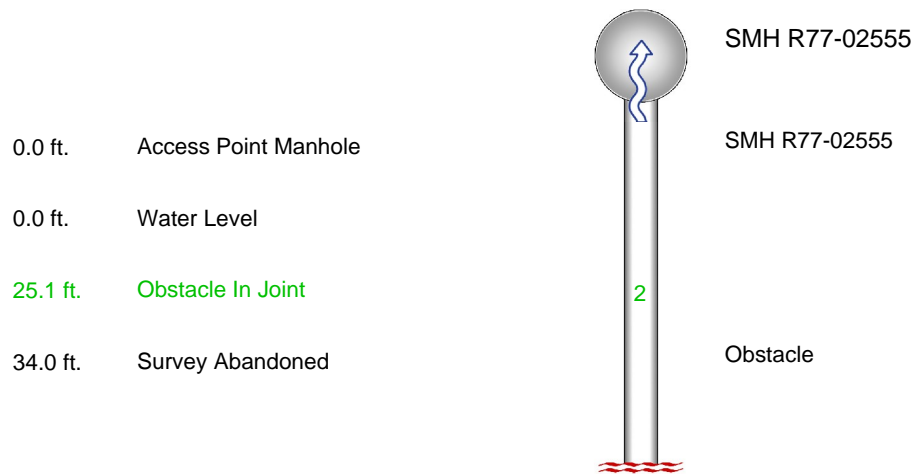
Inspected Ln.: 34

Project Total Ln.: 220.0

Project Inspected Ln.: 34.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565 (re...	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565	220		Circular	In front of #61	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	34		8	8	2
SPR	N/A	MPR	2	PO Number	
SPRI	N/A	MPRI	2	Customer	
QSR	N/A	QMR	2100	Work Order	
OPR	N/A	QMR	2100	Purpose	
OPRI	N/A	QMR	2100	Infiltration/Inflow Investigat...	
2	Surveyed By	Direction	Date	Media label	
2	D_Messier	Upstream	20150330		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
2	U-214-06019237	Jetting	12:26	Snow	
Date Cleaned			End Time	Additional Info	
20150330			12:31		





Defect Listing

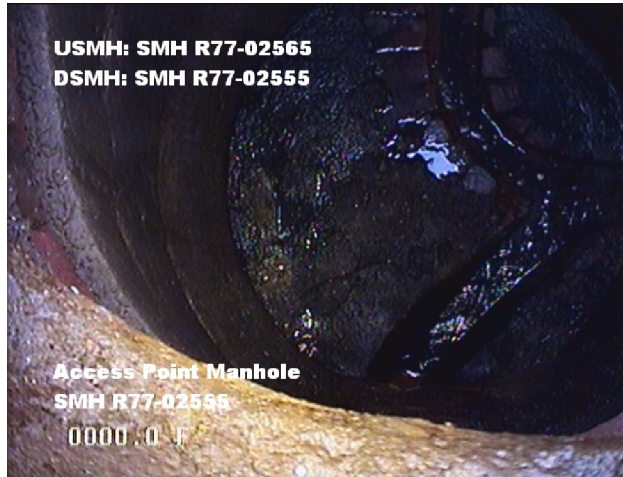
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565 (re...	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565	220		Circular	In front of #61	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	34		8	8	2

SPR	N/A	MPR	2	PO Number	Customer
SPRI	N/A	MPRI	2	Work Order	Environmental Partners
QSR	N/A	QMR	2100		Purpose
				Infiltration/Inflow Investigat...	
OPR		Surveyed By	Direction	Date	Media label
2		D_Messier	Upstream	20150330	
OPRI		Certificate Number	Pre-Cleaning	Time	Weather
2		U-214-06019237	Jetting	12:26	Snow
		Date Cleaned		End Time	Additional Info
		20150330		12:31	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R77-02555									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
25.1 ft.	Obstacle In Joint				10	<input checked="" type="checkbox"/>	12	12	2
34.0 ft.	Survey Abandoned					<input type="checkbox"/>			
Remarks: Obstacle									

Image Report 4/Page

Pipe Segment Refere...	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C...	Sewer Use
Sewer R77-02565 (re...					Main Highw...	Sanitary
Upstream MH SMH R77-02565	Total Length 220	Year Laid	Shape Circular		Location Details In front of #61	
DS Manhole SMH R77-02555	Length surveyed 34	Year Renewed	Height 8	Width 8	Pipe Joint...	
					2	



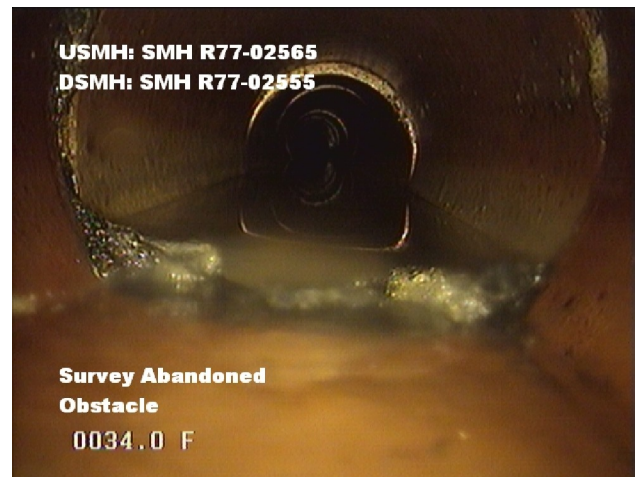
Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R77-02555



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



Distance: 25.1 ft. Grade: 2
Condition: Obstacle In Joint
Remarks: N/A



Distance: 34.0 ft. Grade: 0
Condition: Survey Abandoned
Remarks: Obstacle



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH R77-02565	SMH R77-02555	Sewer R77-02565	3/30/2015	Fuller Street	Vitrified Clay Pipe	8	0	186

Pipe Size: 8

Total Ln.: 0

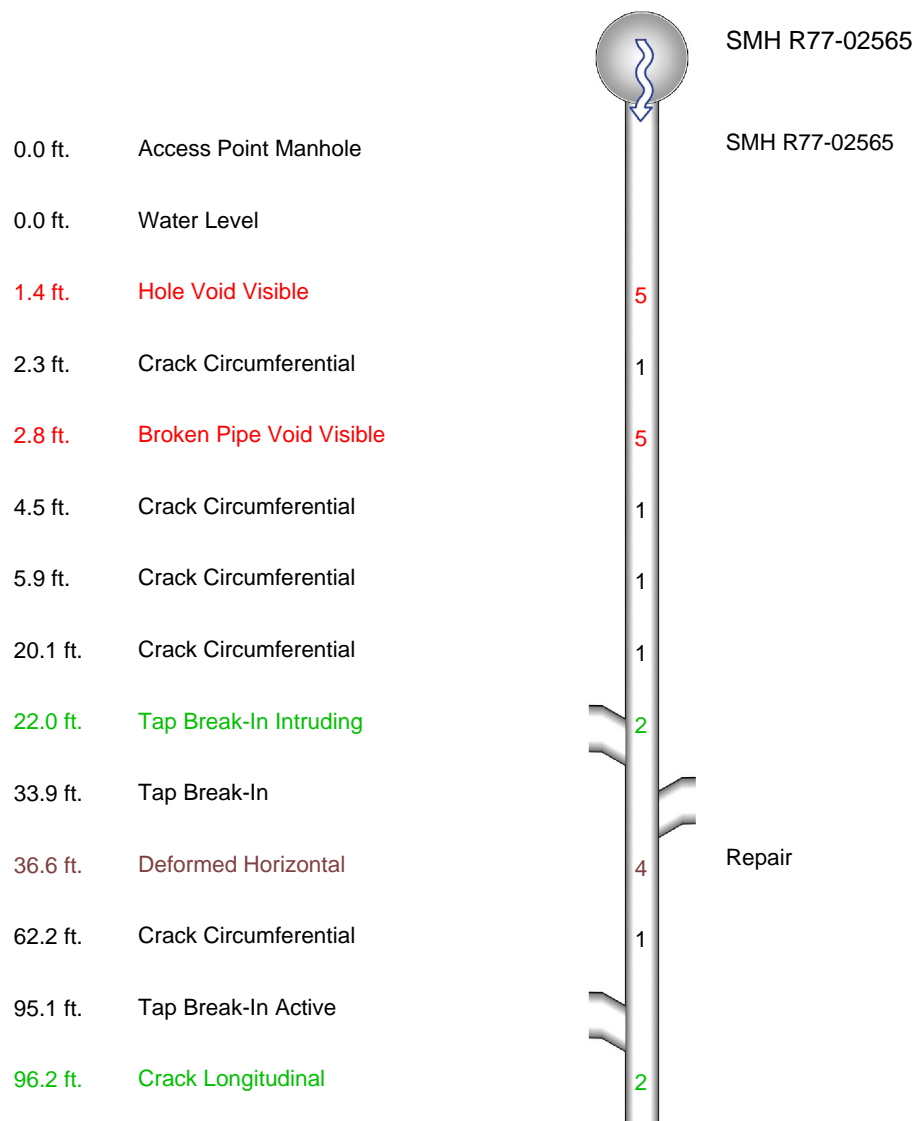
Inspected Ln.: 186

Project Total Ln.: 0.0

Project Inspected Ln.: 186.0

Defect Listing Plot

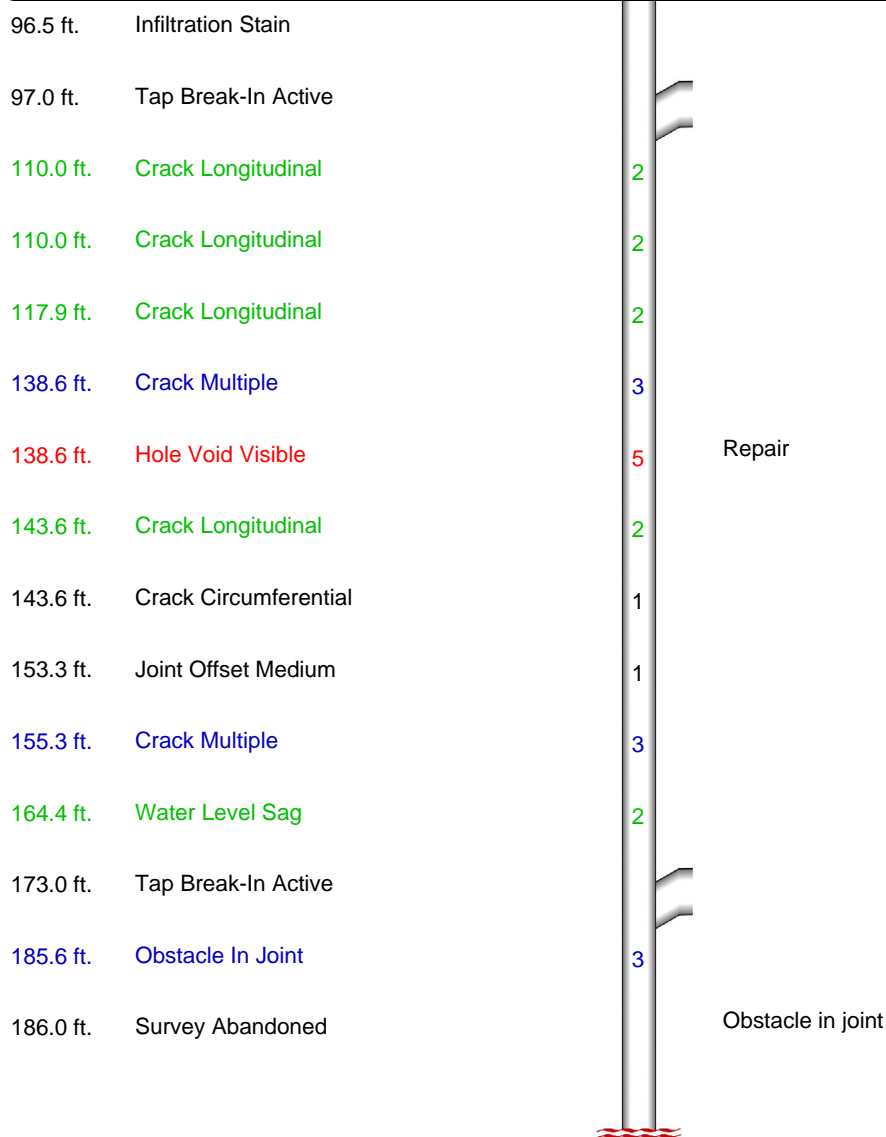
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2
SPR 42	MPR 7	PO Number		Customer	
SPRI 2.3	MPRI 2.3	Work Order		Environmental Partners	
QSR 5341	QMR 3122			Purpose	
				Infiltration/Inflow Investigat...	
OPR 49	Surveyed By	Direction	Date	Media label	
	D_Messier	Downstream	20150330		
OPRI 2.3	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	11:41	Snow	
Date Cleaned			End Time	Additional Info	
20150330			12:09		





Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2
SPR 42	MPR 7	PO Number		Customer	
SPRI 2.3	MPRI 2.3	Work Order		Environmental Partners	
QSR 5341	QMR 3122			Purpose	
				Infiltration/Inflow Investigat...	
OPR 49	Surveyed By	Direction	Date	Media label	
	D_Messier	Downstream	20150330		
OPRI 2.3	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	11:41	Snow	
Date Cleaned			End Time	Additional Info	
20150330			12:09		





Inland Waters Inc.
 275 Scituate Ave
 Johnston Rhode Island 02919
 401-9436-5302

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2

SPR	42	MPR	7	PO Number	Customer
SPRI	2.3	MPRI	2.3	Work Order	Environmental Partners
QSR	5341	QMR	3122		Purpose
				Infiltration/Inflow Investigat...	
OPR		Surveyed By	Direction	Date	Media label
49		D_Messier	Downstream	20150330	
OPRI		Certificate Number	Pre-Cleaning	Time	Weather
2.3		U-214-06019237	Jetting	11:41	Snow
Date Cleaned				End Time	Additional Info
20150330				12:09	



Defect Listing

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2

SPR	42	MPR	7	PO Number	Customer
SPRI	2.3	MPRI	2.3	Work Order	Environmental Partners
QSR	5341	QMR	3122		Purpose
				Infiltration/Inflow Investigat...	
OPR	49	Surveyed By	Direction	Date	Media label
		D_Messier	Downstream	20150330	
OPRI	2.3	Certificate Number	Pre-Cleaning	Time	Weather
		U-214-06019237	Jetting	11:41	Snow
		Date Cleaned		End Time	Additional Info
		20150330		12:09	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R77-02565									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
1.4 ft.	Hole Void Visible					<input checked="" type="checkbox"/>	12		5
2.3 ft.	Crack Circumferential					<input type="checkbox"/>	6	9	1
2.8 ft.	Broken Pipe Void Visible					<input type="checkbox"/>	7		5
4.5 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	9	3	1
5.9 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	7	3	1
20.1 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	10	4	1
22.0 ft.	Tap Break-In Intruding		6	1		<input type="checkbox"/>	3		2
33.9 ft.	Tap Break-In		6			<input type="checkbox"/>	9		
36.6 ft.	Deformed Horizontal				0	<input type="checkbox"/>			4
Remarks: Repair									
62.2 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	9	3	1
95.1 ft.	Tap Break-In Active		6			<input type="checkbox"/>	3		
96.2 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	9		2
96.5 ft.	Infiltration Stain					<input checked="" type="checkbox"/>	9		
97.0 ft.	Tap Break-In Active		6			<input type="checkbox"/>	9		
110.0 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	5		2
110.0 ft.	Crack Longitudinal					<input type="checkbox"/>	7		2
117.9 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	3		2
138.6 ft.	Crack Multiple					<input checked="" type="checkbox"/>	12	12	3
138.6 ft.	Hole Void Visible					<input type="checkbox"/>	12		5
Remarks: Repair									
143.6 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	2		2
143.6 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	11	11	1
153.3 ft.	Joint Offset Medium					<input type="checkbox"/>			1
155.3 ft.	Crack Multiple					<input type="checkbox"/>	10	2	3
164.4 ft.	Water Level Sag				10	<input type="checkbox"/>			2
173.0 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
185.6 ft.	Obstacle In Joint				20	<input checked="" type="checkbox"/>	5	7	3
186.0 ft.	Survey Abandoned					<input type="checkbox"/>			
Remarks: Obstacle in joint									

Image Report 4/Page

Pipe Segment Refere...	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C...	Sewer Use
Upstream MH SMH R77-02565	Total Length	Year Laid	Shape Circular		Location Details In Front of #82	
DS Manhole SMH R77-02555	Length surveyed 186	Year Renewed	Height 8	Width 8	Pipe Joint...	
					2	



Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R77-02565



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



Distance: 1.4 ft. Grade: 5
Condition: Hole Void Visible
Remarks: N/A



Distance: 2.3 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2



Distance: 2.8 ft. Grade: 5
Condition: Broken Pipe Void Visible
Remarks: N/A



Distance: 4.5 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 5.9 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 20.1 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A

Image Report 4/Page

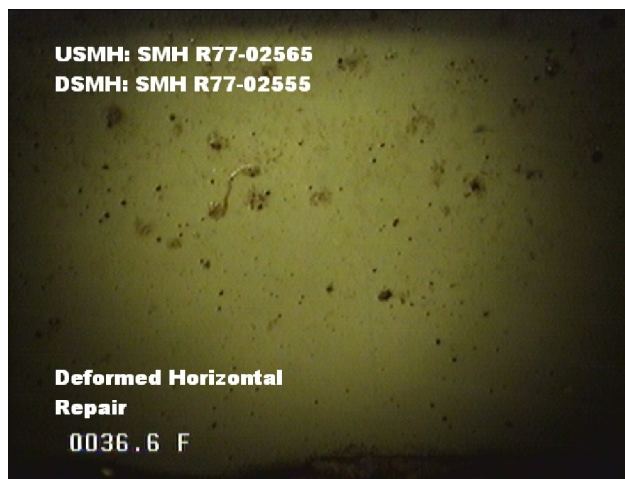
Pipe Segment Refere...	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C...	Sewer Use
Upstream MH SMH R77-02565	Total Length	Year Laid	Shape Circular		Location Details In Front of #82	
DS Manhole SMH R77-02555	Length surveyed 186	Year Renewed	Height 8	Width 8	Pipe Joint...	
					2	



Distance: 22.0 ft. Grade: 2
Condition: Tap Break-In Intruding
Remarks: N/A



Distance: 33.9 ft. Grade: 0
Condition: Tap Break-In
Remarks: N/A



Distance: 36.6 ft. Grade: 4
Condition: Deformed Horizontal
Remarks: Repair



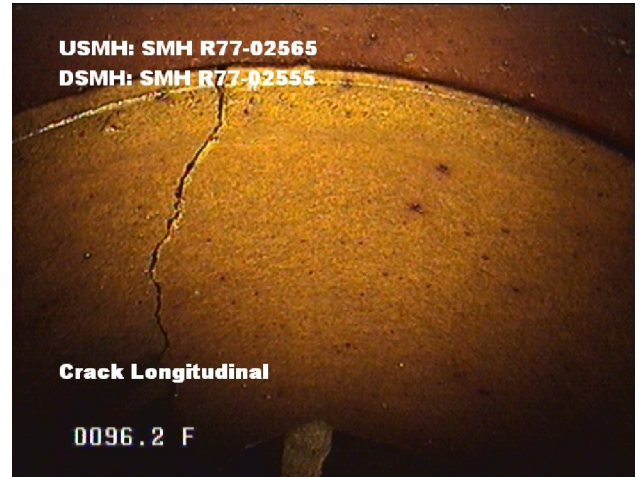
Distance: 62.2 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C...	Sewer Use
Upstream MH SMH R77-02565	Total Length	Year Laid	Shape Circular		Location Details In Front of #82	
DS Manhole SMH R77-02555	Length surveyed 186	Year Renewed	Height 8	Width 8	Pipe Joint...	
					2	



Distance: 95.1 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 96.2 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 96.5 ft. Grade: 0
Condition: Infiltration Stain
Remarks: N/A



Distance: 97.0 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2



Distance: 110.0 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 110.0 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



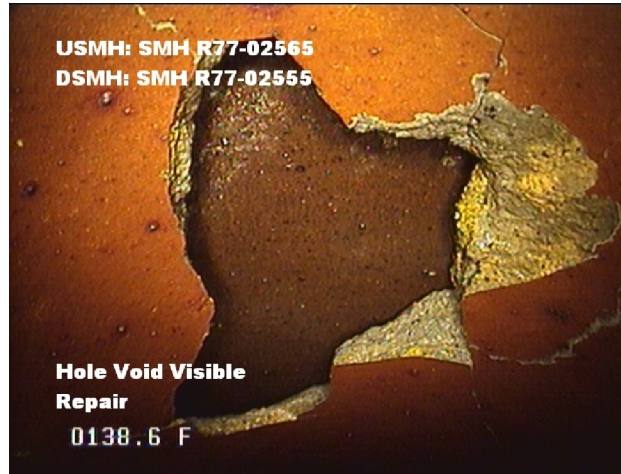
Distance: 117.9 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 138.6 ft. Grade: 3
Condition: Crack Multiple
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2



Distance: 138.6 ft. Grade: 5
Condition: Hole Void Visible
Remarks: Repair



Distance: 143.6 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



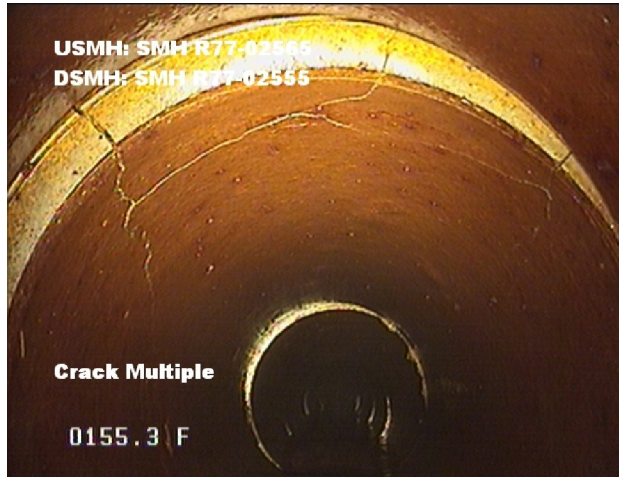
Distance: 143.6 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 153.3 ft. Grade: 1
Condition: Joint Offset Medium
Remarks: N/A

Image Report 4/Page

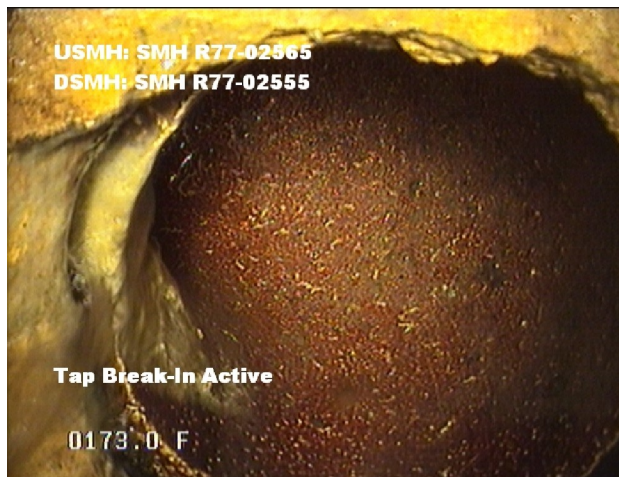
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2



Distance: 155.3 ft. Grade: 3
Condition: Crack Multiple
Remarks: N/A



Distance: 164.4 ft. Grade: 2
Condition: Water Level Sag
Remarks: N/A



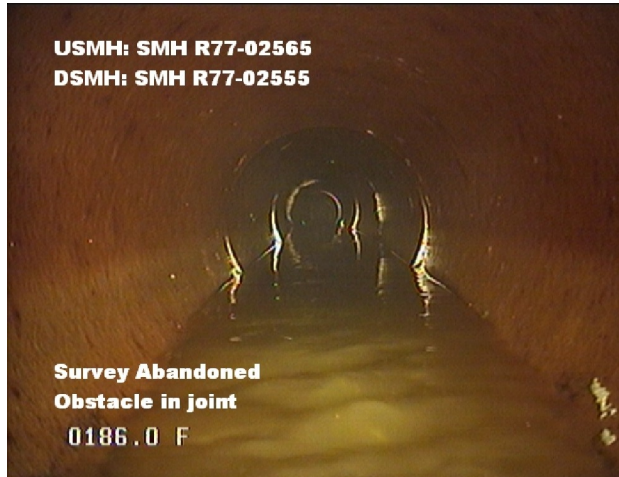
Distance: 173.0 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 185.6 ft. Grade: 3
Condition: Obstacle In Joint
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02565	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R77-02565			Circular	In Front of #82	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R77-02555	186		8	8	2



Distance:	186.0 ft.	Grade:	0
Condition:	Survey Abandoned		
Remarks:	Obstacle in joint		



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH-R77-02570	SMH-R77-02570	Sewer R77-02570	3/30/2015	Fuller Street	Vitrified Clay Pipe	8	169	169

Pipe Size: 8

Total Ln.: 169

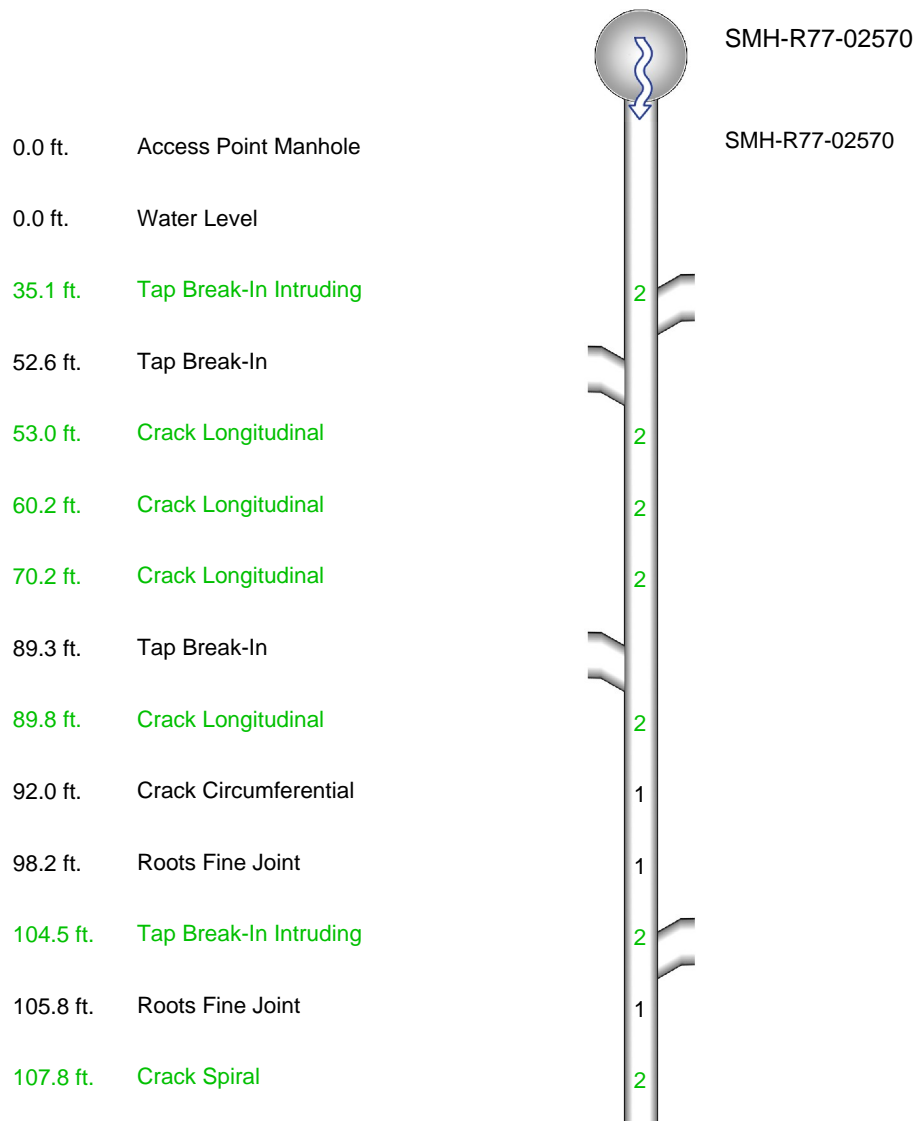
Inspected Ln.: 169

Project Total Ln.: 169.0

Project Inspected Ln.: 169.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2
SPR 18	MPR 6	PO Number		Customer	
SPRI 1.8	MPRI 1.5	Work Order		Environmental Partners	
QSR 3126	QMR 2212			Purpose	
				Infiltration/Inflow Investigat...	
OPR 24	Surveyed By	Direction	Date	Media label	
	D_Messier	Downstream	20150330		
OPRI 1.7	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	11:22	Snow	
Date Cleaned			End Time	Additional Info	
20150330			11:38		





Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2
SPR 18	MPR 6	PO Number		Customer	
SPRI 1.8	MPRI 1.5	Work Order		Environmental Partners	
QSR 3126	QMR 2212			Purpose	
				Infiltration/Inflow Investigat...	
OPR 24	Surveyed By	Direction	Date	Media label	
	D_Messier	Downstream	20150330		
OPRI 1.7	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	11:22	Snow	
Date Cleaned			End Time	Additional Info	
20150330			11:38		

109.8 ft. Crack Circumferential

137.2 ft. Tap Break-In Active

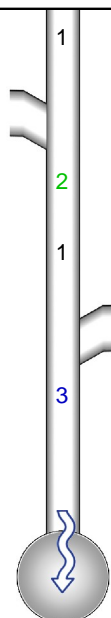
137.7 ft. Crack Spiral

149.7 ft. Crack Circumferential

158.5 ft. Tap Break-In

167.6 ft. Crack Multiple

169.0 ft. Access Point Manhole



SMH-R77-02570

SMH-R77-02570



Defect Listing

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2

SPR	18	MPR	6	PO Number	Customer
SPRI	1.8	MPRI	1.5	Work Order	Environmental Partners
QSR	3126	QMR	2212		Purpose
				Infiltration/Inflow Investigat...	
OPR	24	Surveyed By	Direction	Date	Media label
		D_Messier	Downstream	20150330	
OPRI	1.7	Certificate Number	Pre-Cleaning	Time	Weather
		U-214-06019237	Jetting	11:22	Snow
		Date Cleaned	End Time	Additional Info	
		20150330	11:38		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH-R77-02570									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
35.1 ft.	Tap Break-In Intruding		6	1		<input type="checkbox"/>	10		2
52.6 ft.	Tap Break-In		6			<input type="checkbox"/>	3		
53.0 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	3		2
60.2 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	9		2
70.2 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	9		2
89.3 ft.	Tap Break-In		6			<input type="checkbox"/>	2		
89.8 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	2		2
92.0 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	12	5	1
98.2 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	12	12	1
104.5 ft.	Tap Break-In Intruding		6	1		<input type="checkbox"/>	10		2
105.8 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	2		1
107.8 ft.	Crack Spiral					<input checked="" type="checkbox"/>	2	11	2
109.8 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	10	3	1
137.2 ft.	Tap Break-In Active		6			<input type="checkbox"/>	3		
137.7 ft.	Crack Spiral					<input checked="" type="checkbox"/>	3	11	2
149.7 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	9	2	1
158.5 ft.	Tap Break-In		6			<input type="checkbox"/>	11		
167.6 ft.	Crack Multiple					<input type="checkbox"/>	5	9	3
169.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH-R77-02570									

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2



Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH-R77-02570



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



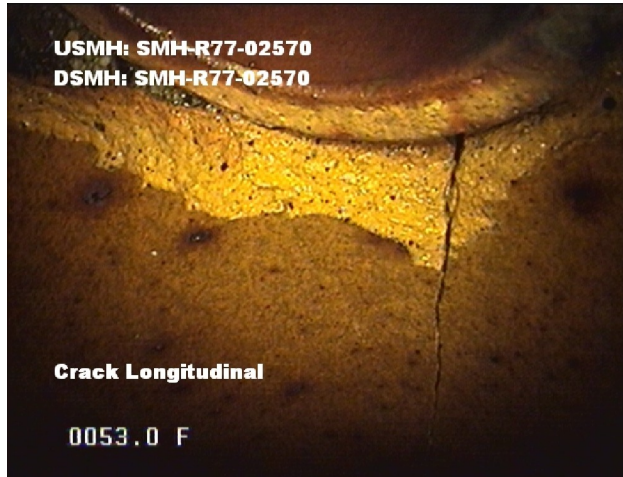
Distance: 35.1 ft. Grade: 2
Condition: Tap Break-In Intruding
Remarks: N/A



Distance: 52.6 ft. Grade: 0
Condition: Tap Break-In
Remarks: N/A

Image Report 4/Page

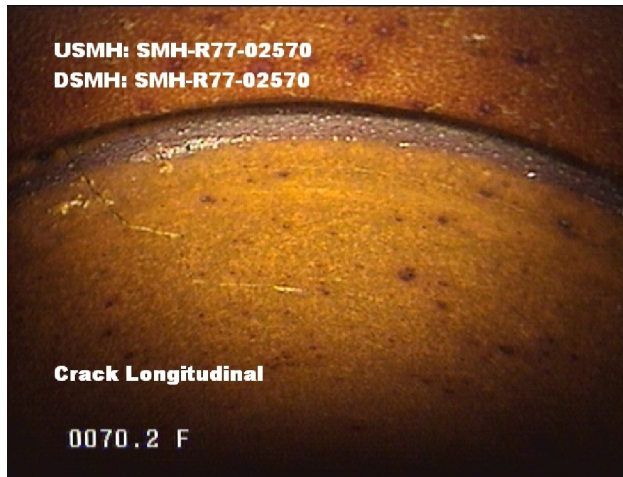
Pipe Segment Refere...	City Waltham Mass	Street Fuller Street	Material Vitrified Clay Pipe		Location C...	Sewer Use
Upstream MH SMH-R77-02570	Total Length 169	Year Laid	Shape Circular		Location Details IN front of #96	
DS Manhole SMH-R77-02570	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint...	
					2	



Distance: 53.0 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 60.2 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 70.2 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 89.3 ft. Grade: 0
Condition: Tap Break-In
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2



Distance: 89.8 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 92.0 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 98.2 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



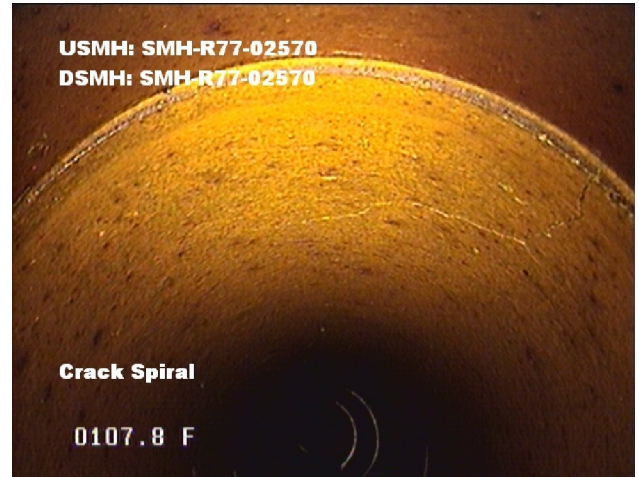
Distance: 104.5 ft. Grade: 2
Condition: Tap Break-In Intruding
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2



Distance: 105.8 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



Distance: 107.8 ft. Grade: 2
Condition: Crack Spiral
Remarks: N/A



Distance: 109.8 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 137.2 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2



Distance: 137.7 ft. Grade: 2
Condition: Crack Spiral
Remarks: N/A



Distance: 149.7 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 158.5 ft. Grade: 0
Condition: Tap Break-In
Remarks: N/A



Distance: 167.6 ft. Grade: 3
Condition: Crack Multiple
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R77-02570	Waltham Mass	Fuller Street	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R77-02570	169		Circular	IN front of #96	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R77-02570	169		8	8	2



Distance:	169.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	SMH-R77-02570		



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH-R61-09016	SMH-R61-09010	sewer r61-09015	3/30/2015	Pierce St	Vitrified Clay Pipe	8	169	169

Pipe Size: 8

Total Ln.: 169

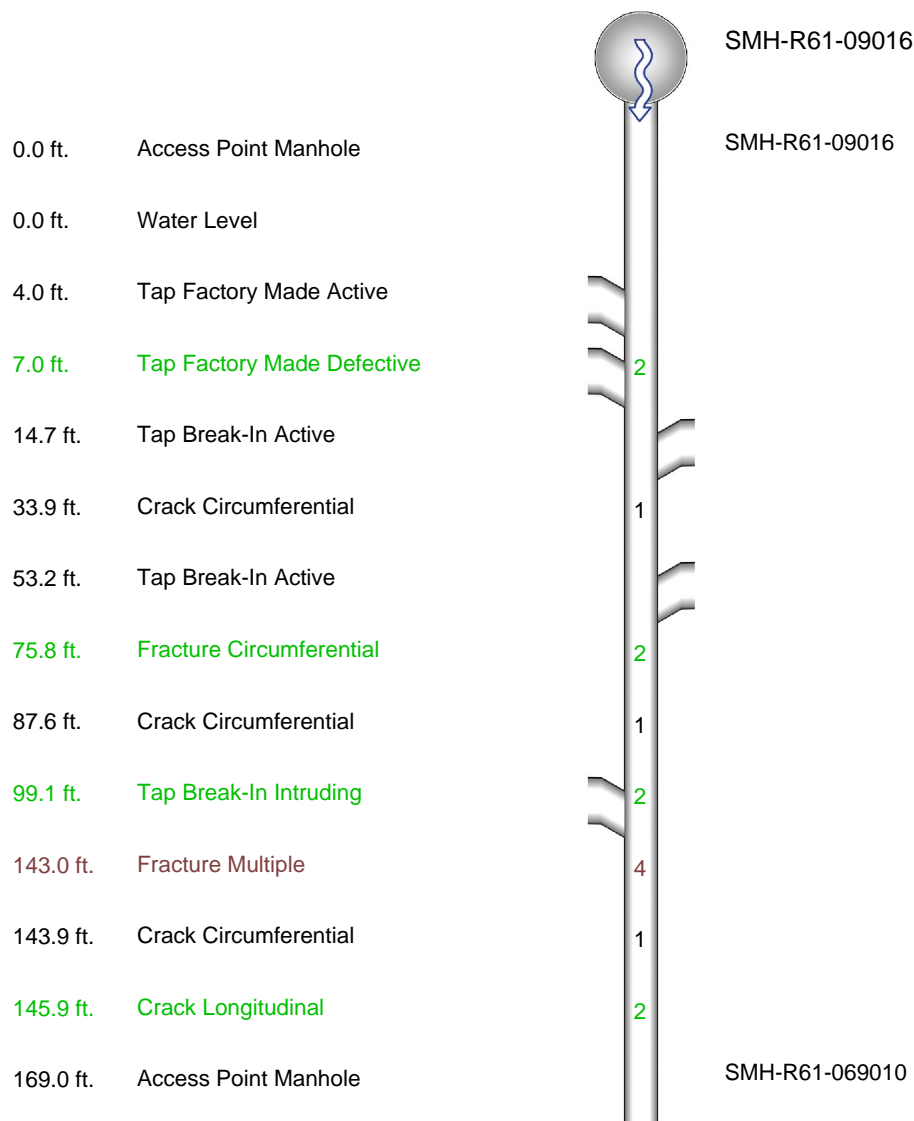
Inspected Ln.: 169

Project Total Ln.: 169.0

Project Inspected Ln.: 169.0

Defect Listing Plot

Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular		Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint...	
SPR 11	MPR 4	PO Number		Customer		
SPRI 1.8	MPRI 2	Work Order		Environmental Partners		
QSR 4122	QMR 2200			Purpose Infiltration/Inflow Investigat...		
OPR 15	Surveyed By D_Messier	Direction Downstream	Date 20150330		Media label	
OPRI 1.9	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 13:41		Weather Snow	
Date Cleaned 20150330			End Time 14:00		Additional Info	





Inland Waters Inc.
 275 Scituate Ave
 Johnston Rhode Island 02919
 401-9436-5302

Defect Listing Plot

Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe	Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular	Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint... 2
SPR 11	MPR 4	PO Number		Customer	
SPRI 1.8	MPRI 2	Work Order		Environmental Partners	
QSR 4122	QMR 2200			Purpose Infiltration/Inflow Investigat...	
OPR 15	Surveyed By D_Messier	Direction Downstream	Date 20150330	Media label	
OPRI 1.9	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 13:41	Weather Snow	
Date Cleaned 20150330			End Time 14:00	Additional Info	



SMH-R61-09010



Defect Listing

Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe	Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular	Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint... 2

SPR 11	MPR 4	PO Number		Customer	
SPRI 1.8	MPRI 2	Work Order		Environmental Partners	
QSR 4122	QMR 2200			Purpose Infiltration/Inflow Investigat...	
OPR 15	Surveyed By D_Messier	Direction Downstream	Date 20150330	Media label	
OPRI 1.9	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 13:41	Weather Snow	
Date Cleaned 20150330			End Time 14:00	Additional Info	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH-R61-09016									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
4.0 ft.	Tap Factory Made Active		6			<input type="checkbox"/>	2		
7.0 ft.	Tap Factory Made Defective		6			<input type="checkbox"/>	3		2
14.7 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
33.9 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	7	11	1
53.2 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
75.8 ft.	Fracture Circumferential					<input checked="" type="checkbox"/>	2	7	2
87.6 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	11	2	1
99.1 ft.	Tap Break-In Intruding		6	1		<input type="checkbox"/>	2		2
143.0 ft.	Fracture Multiple					<input checked="" type="checkbox"/>	9	3	4
143.9 ft.	Crack Circumferential					<input checked="" type="checkbox"/>	12	12	1
145.9 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	12		2
169.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH-R61-069010									

Image Report 4/Page

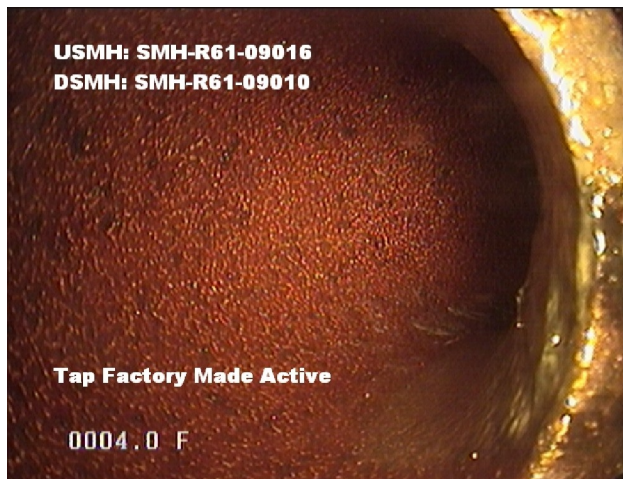
Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular		Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint... 2	



Distance:	0.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	SMH-R61-09016		



Distance:	0.0 ft.	Grade:	0
Condition:	Water Level		
Remarks:	N/A		



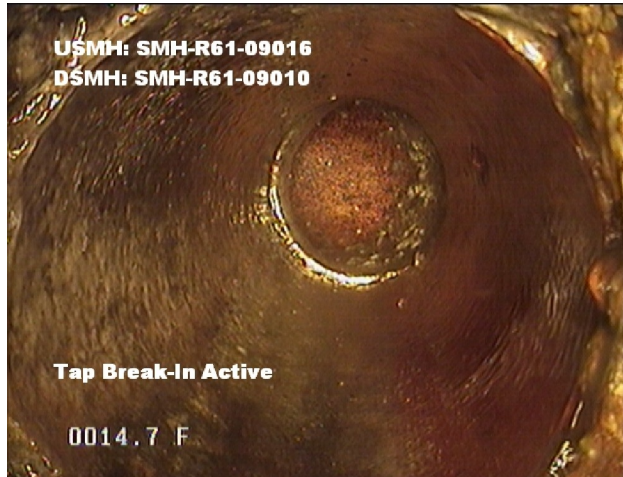
Distance:	4.0 ft.	Grade:	0
Condition:	Tap Factory Made Active		
Remarks:	N/A		



Distance:	7.0 ft.	Grade:	2
Condition:	Tap Factory Made Defective		
Remarks:	N/A		

Image Report 4/Page

Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular		Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint... 2	



Distance: 14.7 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 33.9 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



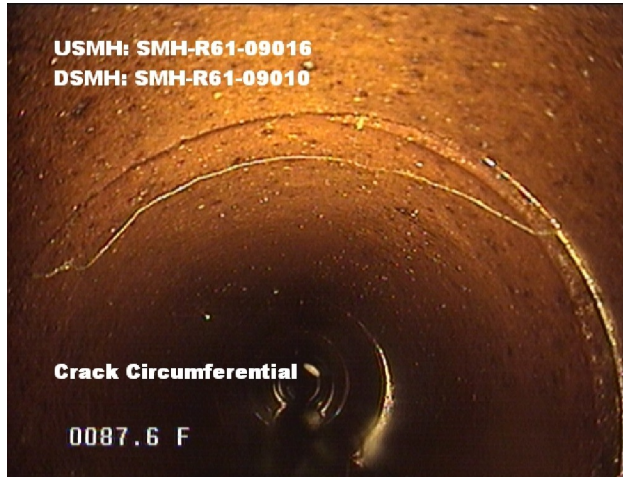
Distance: 53.2 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



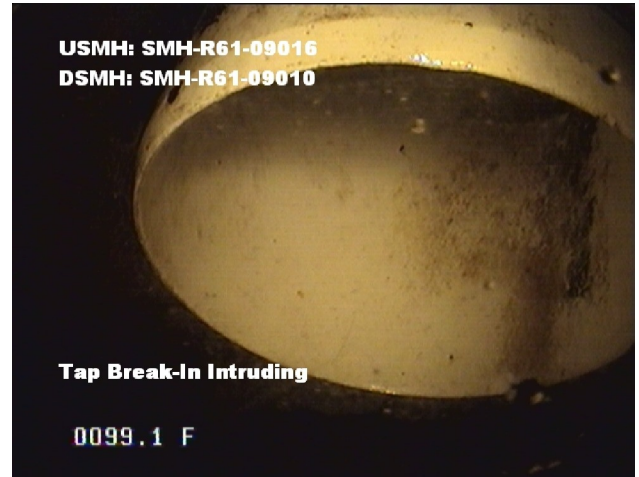
Distance: 75.8 ft. Grade: 2
Condition: Fracture Circumferential
Remarks: N/A

Image Report 4/Page

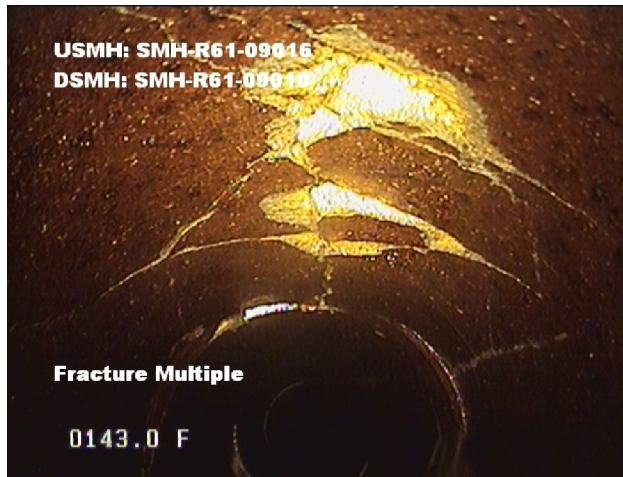
Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular		Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint... 2	



Distance: 87.6 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A



Distance: 99.1 ft. Grade: 2
Condition: Tap Break-In Intruding
Remarks: N/A



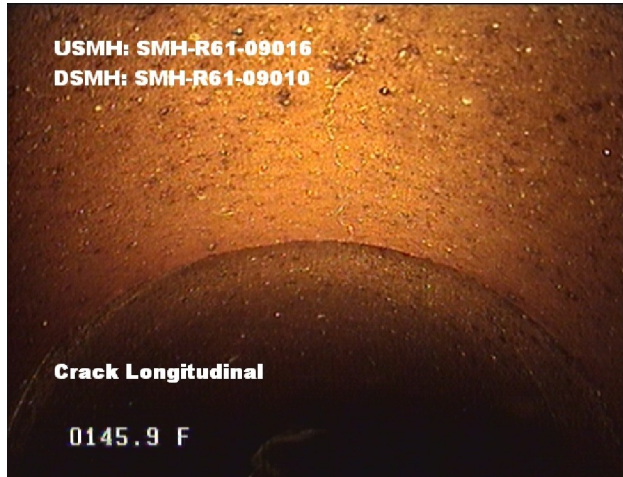
Distance: 143.0 ft. Grade: 4
Condition: Fracture Multiple
Remarks: N/A



Distance: 143.9 ft. Grade: 1
Condition: Crack Circumferential
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere... sewer r61-09015	City Waltham Mass	Street Pierce St	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R61-09016	Total Length 169	Year Laid	Shape Circular		Location Details IN front of #10	
DS Manhole SMH-R61-09010	Length surveyed 169	Year Renewed	Height 8	Width 8	Pipe Joint... 2	



Distance: 145.9 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 169.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH-R61-069010



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTEAL PARTNERS GROUP.INC WALTHAM WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
R46-22323	R46-22325	Drain R46-22325	4/1/2015	Upton Road	Vitrified Clay Pipe	15	124	124

Pipe Size: 15

Total Ln.: 124

Inspected Ln.: 124

Project Total Ln.: 124.0

Project Inspected Ln.: 124.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R46-22325	Waltham Mass	Upton Road	Vitrified Clay Pipe	Easement/R...	Stormwater
Upstream MH R46-22323	Total Length 124	Year Laid	Shape Circular	Location Details Infront of # 19	
DS Manhole R46-22325	Length surveyed 124	Year Renewed	Height 15	Width 15	Pipe Joint... 2
SPR 17	MPR 12	PO Number		Customer	
SPRI 2.1	MPRI 1.3	Work Order		Environmental Partners	
QSR 3127	QMR 2316			Purpose Infiltration/Inflow Investigat...	
OPR 29	Surveyed By D_Messier	Direction Upstream	Date 20150401	Media label	
OPRI 1.7	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 08:13	Weather Dry	
Date Cleaned 20150401			End Time 08:26	Additional Info	



Defect Listing Plot

Pipe Segment Refere... Drain R46-22325	City Waltham Mass	Street Upton Road	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Stormwater
Upstream MH R46-22323	Total Length 124	Year Laid	Shape Circular	Location Details Infront of # 19	
DS Manhole R46-22325	Length surveyed 124	Year Renewed	Height 15	Width 15	Pipe Joint... 2
SPR 17	MPR 12	PO Number		Customer	
SPRI 2.1	MPRI 1.3	Work Order		Environmental Partners	
QSR 3127	QMR 2316			Purpose Infiltration/Inflow Investigat...	
OPR 29	Surveyed By D_Messier	Direction Upstream	Date 20150401	Media label	
OPRI 1.7	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 08:13	Weather Dry	
Date Cleaned 20150401			End Time 08:26	Additional Info	

61.8 ft. Roots Fine Joint - F01

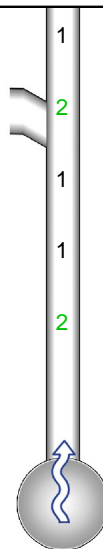
70.8 ft. Tap Break-In Intruding

78.8 ft. Roots Fine Joint

98.2 ft. Roots Fine Joint

115.5 ft. Roots Tap Joint

124.0 ft. Access Point Manhole



DMH R46-22323

R46-22323



Defect Listing

Pipe Segment Refere... Drain R46-22325	City Waltham Mass	Street Upton Road	Material Vitrified Clay Pipe	Location C... Easement/R...	Sewer Use Stormwater
Upstream MH R46-22323	Total Length 124	Year Laid	Shape Circular	Location Details Infront of # 19	
DS Manhole R46-22325	Length surveyed 124	Year Renewed	Height 15	Width 15	Pipe Joint... 2

SPR 17	MPR 12	PO Number		Customer	
SPRI 2.1	MPRI 1.3	Work Order		Environmental Partners	
QSR 3127	QMR 2316			Purpose Infiltration/Inflow Investigat...	
OPR 29	Surveyed By D_Messier	Direction Upstream	Date 20150401	Media label	
OPRI 1.7	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 08:13	Weather Dry	
Date Cleaned 20150401			End Time 08:26	Additional Info	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: DMH-R46-22325									
0.0 ft.	Water Level				10	<input type="checkbox"/>			
9.2 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	10		2
12.3 ft.	Tap Break-In Intruding		6	2		<input type="checkbox"/>	2		2
19.9 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	2		2
22.4 ft.	Crack Multiple					<input type="checkbox"/>	9	2	3
23.5 ft.	Tap Break-In Active		6			<input type="checkbox"/>	11		
24.3 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	12		2
26.2 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	2		2
32.6 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	3		2
37.9 ft.	Tap Break-In Active		6			<input type="checkbox"/>	11		
41.8 ft.	Roots Fine Joint	S01				<input checked="" type="checkbox"/>	12	12	1
50.9 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	12		2
58.2 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	11		2
61.8 ft.	Roots Fine Joint	F01				<input checked="" type="checkbox"/>	12	12	1
70.8 ft.	Tap Break-In Intruding		10	1		<input type="checkbox"/>	5		2
78.8 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	4		1
98.2 ft.	Roots Fine Joint					<input checked="" type="checkbox"/>	4		1
115.5 ft.	Roots Tap Joint				15	<input checked="" type="checkbox"/>	5		2
124.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: DMH R46-22323									

Image Report 4/Page

Pipe Segment Refere... Drain R46-22325	City Waltham Mass	Street Upton Road	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Stormwater
Upstream MH R46-22323	Total Length 124	Year Laid	Shape Circular		Location Details Infront of # 19	
DS Manhole R46-22325	Length surveyed 124	Year Renewed	Height 15	Width 15	Pipe Joint... 2	



Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: DMH-R46-22325



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



Distance: 9.2 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 12.3 ft. Grade: 2
Condition: Tap Break-In Intruding
Remarks: N/A

Image Report 4/Page

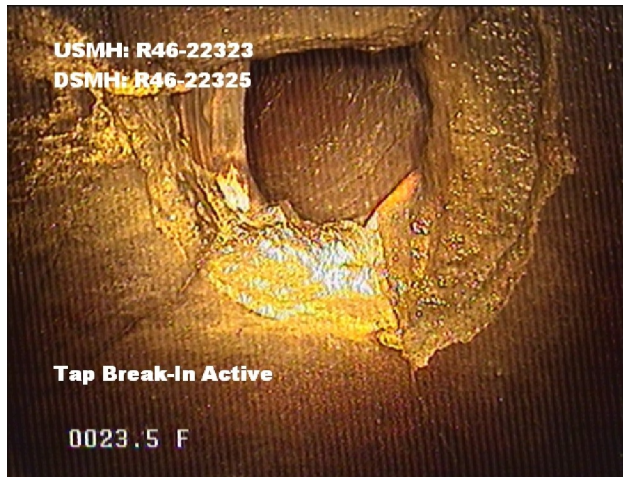
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R46-22325	Waltham Mass	Upton Road	Vitrified Clay Pipe	Easement/R...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
R46-22323	124		Circular	Infront of # 19	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
R46-22325	124		15	15	2



Distance: 19.9 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 22.4 ft. Grade: 3
Condition: Crack Multiple
Remarks: N/A



Distance: 23.5 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



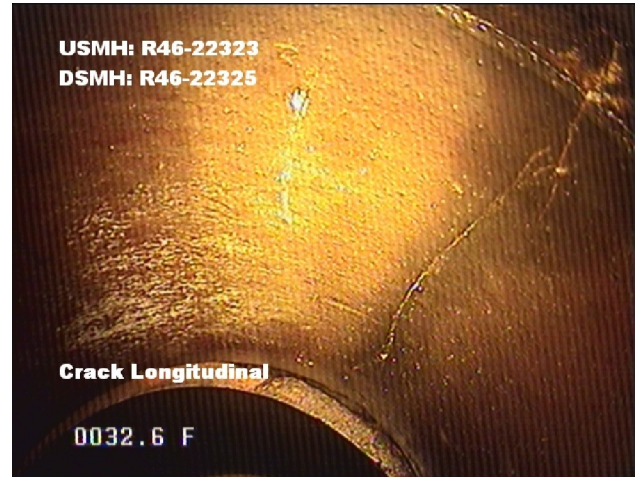
Distance: 24.3 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R46-22325	Waltham Mass	Upton Road	Vitrified Clay Pipe	Easement/R...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
R46-22323	124		Circular	Infront of # 19	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
R46-22325	124		15	15	2



Distance: 26.2 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 32.6 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



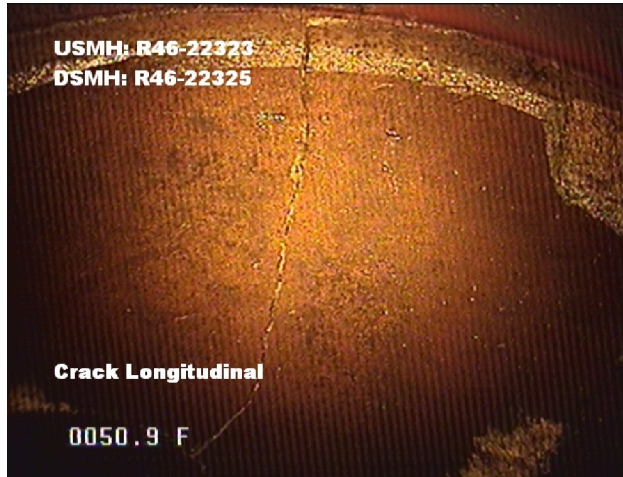
Distance: 37.9 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A



Distance: 41.8 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Drain R46-22325	Waltham Mass	Upton Road	Vitrified Clay Pipe	Easement/R...	Stormwater
Upstream MH	Total Length	Year Laid	Shape	Location Details	
R46-22323	124		Circular	Infront of # 19	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
R46-22325	124		15	15	2



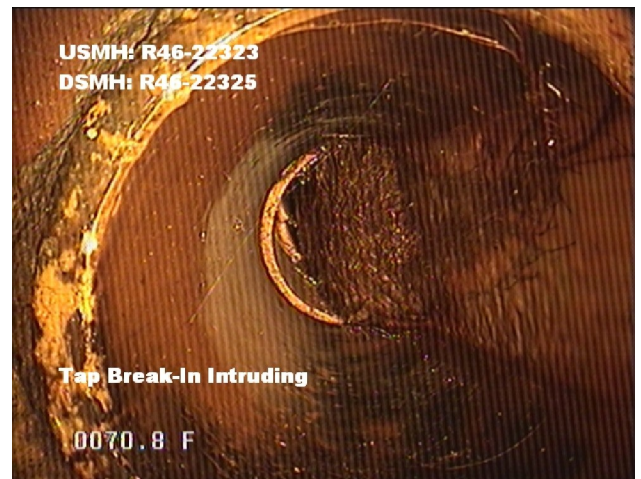
Distance: 50.9 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 58.2 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 61.8 ft. Grade: 1
Condition: Roots Fine Joint
Remarks: N/A



Distance: 70.8 ft. Grade: 2
Condition: Tap Break-In Intruding
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere... Drain R46-22325	City Waltham Mass	Street Upton Road	Material Vitrified Clay Pipe		Location C... Easement/R...	Sewer Use Stormwater
Upstream MH R46-22323	Total Length 124	Year Laid	Shape Circular		Location Details Infront of # 19	
DS Manhole R46-22325	Length surveyed 124	Year Renewed	Height 15	Width 15	Pipe Joint... 2	



Distance:	78.8 ft.	Grade:	1
Condition:	Roots Fine Joint		
Remarks:	N/A		



Distance:	98.2 ft.	Grade:	1
Condition:	Roots Fine Joint		
Remarks:	N/A		



Distance:	115.5 ft.	Grade:	2
Condition:	Roots Tap Joint		
Remarks:	N/A		



Distance:	124.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	DMH R46-22323		



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH R46-24305-A	SMH R46-24305	Sewer R46-24305	4/1/2015	Upton Road	Vitrified Clay Pipe	8	11	11

Pipe Size: 8

Total Ln.: 11

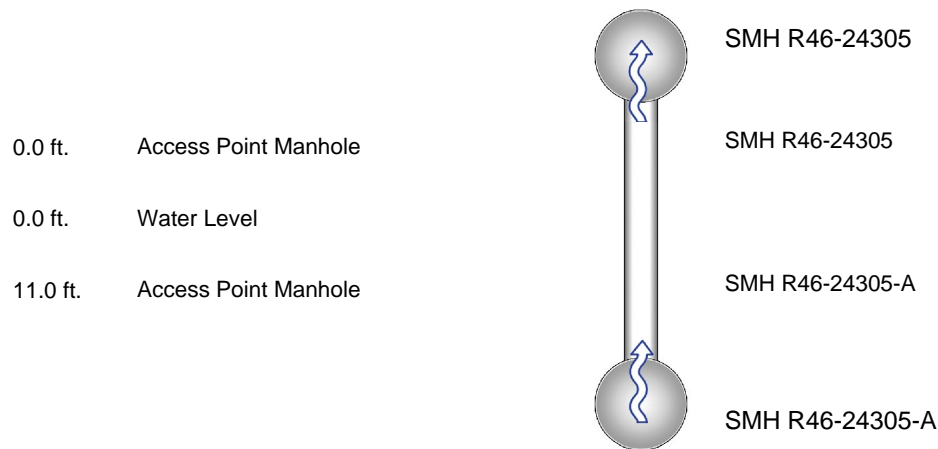
Inspected Ln.: 11

Project Total Ln.: 11.0

Project Inspected Ln.: 11.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R46-24305	Waltham Mas	Upton Road	Vitrified Clay Pipe	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R46-24305-A	11		Circular	In front of # 19	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R46-24305	11		8	8	3
SPR	N/A	MPR	N/A	PO Number	
SPRI	N/A	MPRI	N/A	Customer	
QSR	N/A	QMR	N/A	Work Order	
OPR	N/A	OPRI	N/A	Purpose	
OPRI	N/A	OPRI	N/A	Infiltration/Inflow Investigat...	
OPR	N/A	OPRI	N/A	Media label	
OPRI	N/A	OPRI	N/A	Weather	
OPRI	N/A	OPRI	N/A	Dry	
OPRI	N/A	OPRI	N/A	Additional Info	
OPRI	N/A	OPRI	N/A	Date Cleaned	
OPRI	N/A	OPRI	N/A	20150401	
OPRI	N/A	OPRI	N/A	End Time	
OPRI	N/A	OPRI	N/A	08:48	





Defect Listing

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R46-24305	Waltham Mas	Upton Road	Vitrified Clay Pipe	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R46-24305-A	11		Circular	In front of # 19	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R46-24305	11		8	8	3

SPR	N/A	MPR	N/A	PO Number	Customer
SPRI	N/A	MPRI	N/A	Work Order	Environmental Partners
QSR	N/A	QMR	N/A		Purpose
				Infiltration/Inflow Investigat...	
OPR		Surveyed By	Direction	Date	Media label
N/A		D_Messier	Upstream	20150401	
OPRI		Certificate Number	Pre-Cleaning	Time	Weather
N/A		U-214-06019237	Jetting	08:43	Dry
		Date Cleaned		End Time	Additional Info
		20150401		08:48	

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R46-24305									
0.0 ft.	Water Level				5	<input type="checkbox"/>			
11.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R46-24305-A									

Image Report 4/Page

Pipe Segment Refere...	City Waltham Mas	Street Upton Road	Material Vitrified Clay Pipe		Location C...	Sewer Use
Upstream MH SMH R46-24305-A	Total Length 11	Year Laid	Shape Circular		Location Details In front of # 19	
DS Manhole SMH R46-24305	Length surveyed 11	Year Renewed	Height 8	Width 8	Pipe Joint...	
					3	



Distance:	0.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	SMH R46-24305		



Distance:	0.0 ft.	Grade:	0
Condition:	Water Level		
Remarks:	N/A		



Distance:	11.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	SMH R46-24305-A		



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH-R46-243 10	SMH-R46-243 05-A	Sewer R46-24305-A	4/1/2015	Upton Road	Vitrified Clay Pipe	8	114	114

Pipe Size: 8

Total Ln.: 114

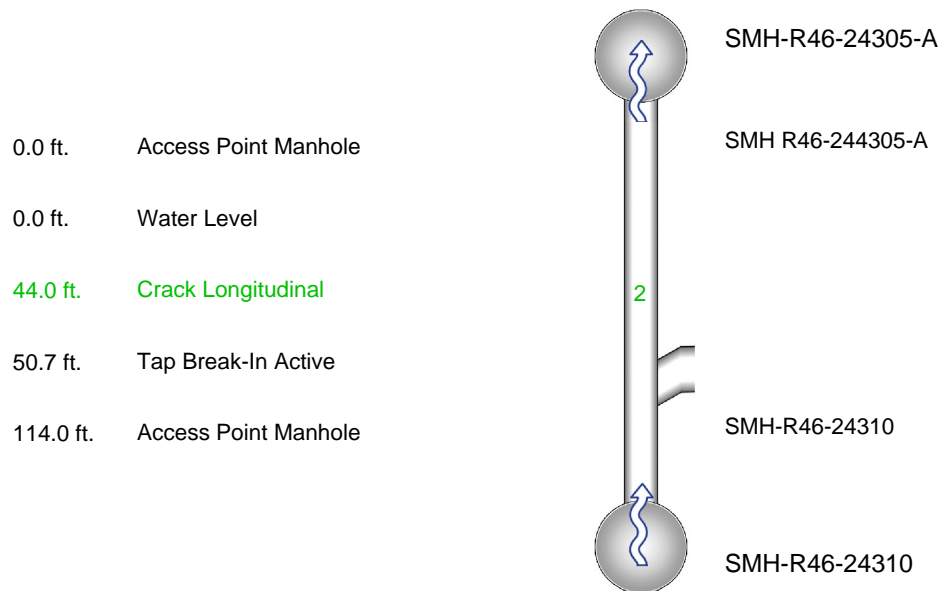
Inspected Ln.: 114

Project Total Ln.: 114.0

Project Inspected Ln.: 114.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R46-24305-A	Waltham Mas	Upton Road	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R46-24310	114		Circular	Inbetween #19 #15	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R46-24305-A	114		8	8	3
SPR 2	MPR N/A	PO Number		Customer	
SPRI 2	MPRI N/A	Work Order		Environmental Partners	
QSR 2100	QMR N/A			Purpose	
				Infiltration/Inflow Investigat...	
OPR 2	Surveyed By	Direction	Date	Media label	
	D_Messier	Upstream	20150401		
OPRI 2	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	08:51	Dry	
Date Cleaned			End Time	Additional Info	
20150401			09:02		





Defect Listing

Pipe Segment Refere... Sewer R46-24305-A	City Waltham Mas	Street Upton Road	Material Vitrified Clay Pipe	Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R46-24310	Total Length 114	Year Laid	Shape Circular	Location Details Inbetween #19 #15	
DS Manhole SMH-R46-24305-A	Length surveyed 114	Year Renewed	Height 8	Width 8	Pipe Joint... 3

SPR	2	MPR	N/A	PO Number	Customer
SPRI	2	MPRI	N/A	Work Order	Environmental Partners
QSR	2100	QMR	N/A		Purpose Infiltration/Inflow Investigat...
OPR	2	Surveyed By D_Messier	Direction Upstream	Date 20150401	Media label
OPRI	2	Certificate Number U-214-06019237	Pre-Cleaning Jetting	Time 08:51	Weather Dry
Date Cleaned 20150401				End Time 09:02	Additional Info

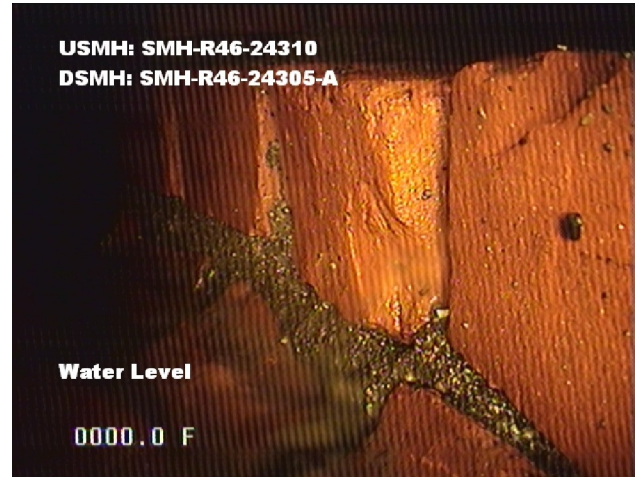
Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R46-244305-A									
0.0 ft.	Water Level				10	<input type="checkbox"/>			
44.0 ft.	Crack Longitudinal					<input checked="" type="checkbox"/>	10		2
50.7 ft.	Tap Break-In Active		6			<input type="checkbox"/>	12		
114.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH-R46-24310									

Image Report 4/Page

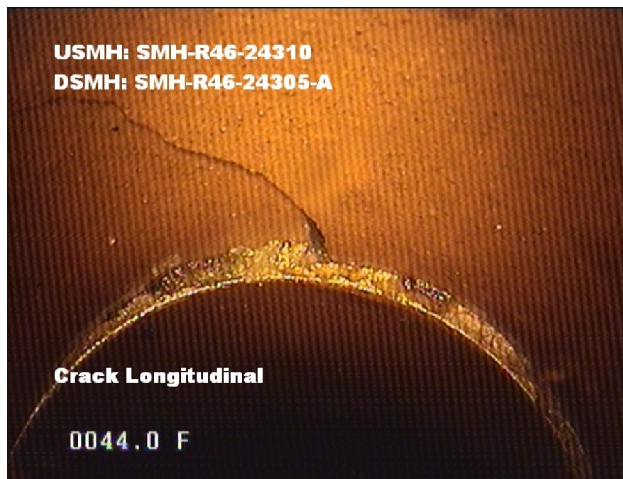
Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R46-24305-A	Waltham Mas	Upton Road	Vitrified Clay Pipe	Main Highw...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH-R46-24310	114		Circular	Inbetween #19 #15	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH-R46-24305-A	114		8	8	3



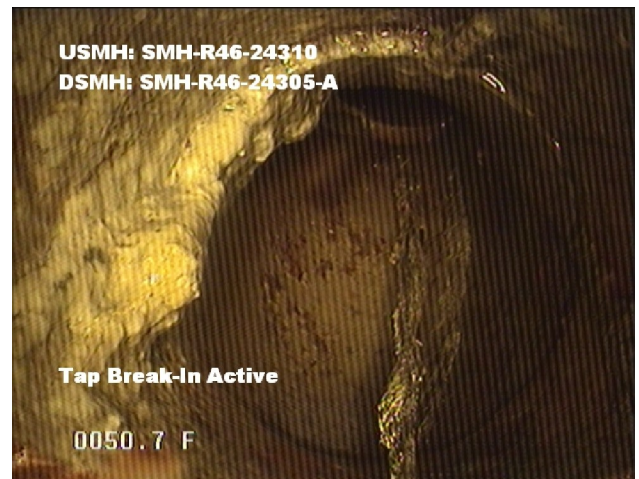
Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R46-244305-A



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



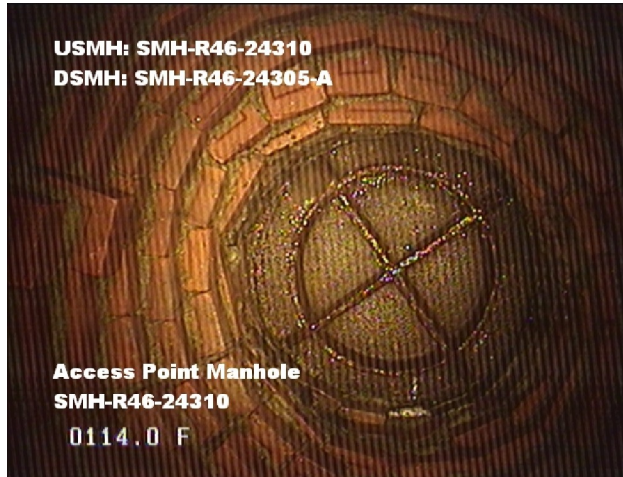
Distance: 44.0 ft. Grade: 2
Condition: Crack Longitudinal
Remarks: N/A



Distance: 50.7 ft. Grade: 0
Condition: Tap Break-In Active
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere... Sewer R46-24305-A	City Waltham Mas	Street Upton Road	Material Vitrified Clay Pipe		Location C... Main Highw...	Sewer Use Sanitary
Upstream MH SMH-R46-24310	Total Length 114	Year Laid	Shape Circular		Location Details Inbetween #19 #15	
DS Manhole SMH-R46-24305-A	Length surveyed 114	Year Renewed	Height 8	Width 8	Pipe Joint... 3	



Distance:	114.0 ft.	Grade:	0
Condition:	Access Point Manhole		
Remarks:	SMH-R46-24310		



Inland Waters Inc.
275 Scituate Ave
Johnston Rhode Island 02919
401-9436-5302

Project Summary

Project Name:		ENVIRONMENTAL PARTNERS GROUP SEWER WE 4 3 15						
US MH	DS MH	Pipe ID	Date	Street	Material	Size	Total	Insp
SMH R34 -13665	SMH R34_13660	Sewer R34_13665	3/30/2015	Juniper Hill Road	Asbestos Cement	8	125	125

Pipe Size: 8

Total Ln.: 125

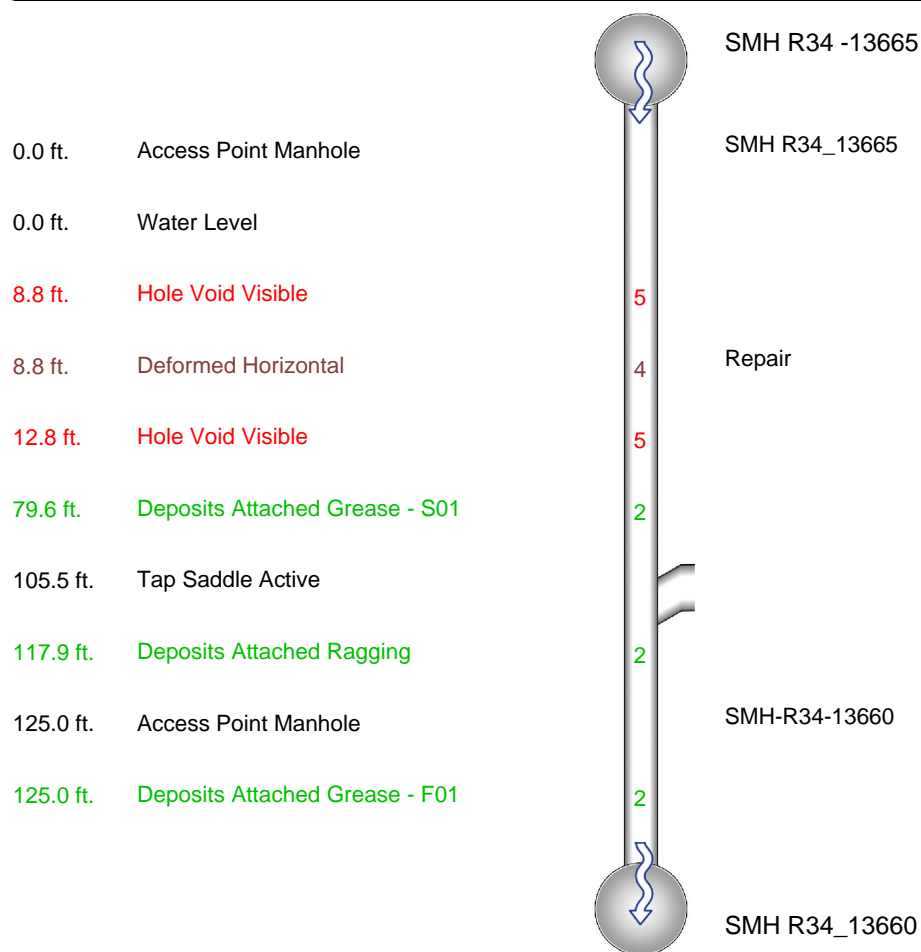
Inspected Ln.: 125

Project Total Ln.: 125.0

Project Inspected Ln.: 125.0

Defect Listing Plot

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R34_13665	Waltham Mass	Juniper Hill Road	Asbestos Cement	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R34 -13665	125		Circular	Behind # 55 Cliff	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R34_13660	125		8	8	13
SPR 14	MPR 20	PO Number		Customer	
SPRI 4.7	MPRI 2	Work Order		Environmental Partners	
QSR 5241	QMR 2A00			Purpose	
				Infiltration/Inflow Investigat...	
OPR 34	Surveyed By	Direction	Date	Media label	
	D_Messier	Downstream	20150330		
OPRI 2.6	Certificate Number	Pre-Cleaning	Time	Weather	
	U-214-06019237	Jetting	08:42	Snow	
Date Cleaned			End Time	Additional Info	
20150330			08:56		





Defect Listing

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R34_13665	Waltham Mass	Juniper Hill Road	Asbestos Cement	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R34 -13665	125		Circular	Behind # 55 Cliff	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R34_13660	125		8	8	13

SPR	14	MPR	20	PO Number	Customer
SPRI	4.7	MPRI	2	Work Order	Environmental Partners
QSR	5241	QMR	2A00		Purpose
				Infiltration/Inflow Investigat...	
OPR	34	Surveyed By	Direction	Date	Media label
		D_Messier	Downstream	20150330	
OPRI	2.6	Certificate Number	Pre-Cleaning	Time	Weather
		U-214-06019237	Jetting	08:42	Snow
		Date Cleaned	End Time	Additional Info	
		20150330	08:56		

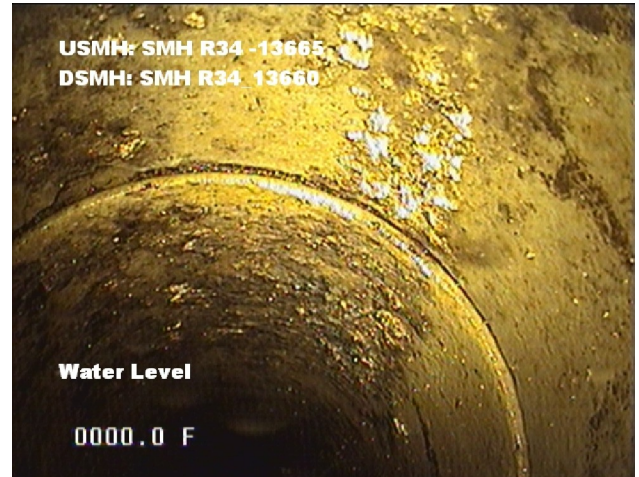
Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH R34_13665									
0.0 ft.	Water Level				10	<input type="checkbox"/>			
8.8 ft.	Hole Void Visible					<input checked="" type="checkbox"/>	3		5
8.8 ft.	Deformed Horizontal				5	<input type="checkbox"/>			4
Remarks: Repair									
12.8 ft.	Hole Void Visible					<input checked="" type="checkbox"/>	9		5
79.6 ft.	Deposits Attached Grease	S01			5	<input type="checkbox"/>	11	1	2
105.5 ft.	Tap Saddle Active		6			<input type="checkbox"/>	12		
117.9 ft.	Deposits Attached Ragging				5	<input type="checkbox"/>	2		2
125.0 ft.	Access Point Manhole					<input type="checkbox"/>			
Remarks: SMH-R34-13660									
125.0 ft.	Deposits Attached Grease	F01			5	<input type="checkbox"/>	11	1	2

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R34_13665	Waltham Mass	Juniper Hill Road	Asbestos Cement	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R34 -13665	125		Circular	Behind # 55 Cliff	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R34_13660	125		8	8	13



Distance: 0.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH R34_13665



Distance: 0.0 ft. Grade: 0
Condition: Water Level
Remarks: N/A



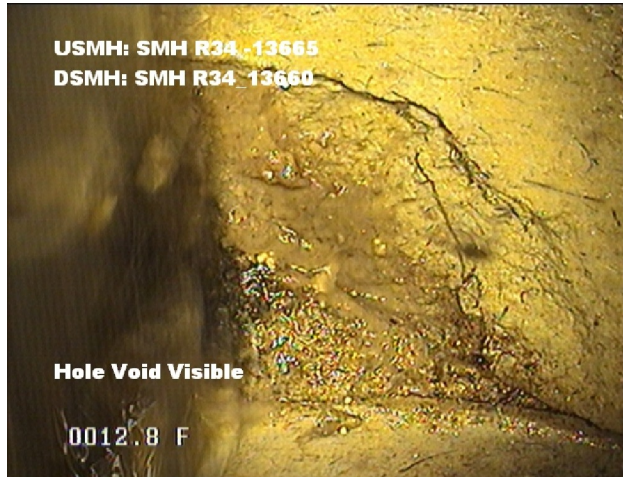
Distance: 8.8 ft. Grade: 5
Condition: Hole Void Visible
Remarks: N/A



Distance: 8.8 ft. Grade: 4
Condition: Deformed Horizontal
Remarks: Repair

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R34_13665	Waltham Mass	Juniper Hill Road	Asbestos Cement	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R34 -13665	125		Circular	Behind # 55 Cliff	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R34_13660	125		8	8	13



Distance: 12.8 ft. Grade: 5
Condition: Hole Void Visible
Remarks: N/A



Distance: 79.6 ft. Grade: 2
Condition: Deposits Attached Grease
Remarks: N/A



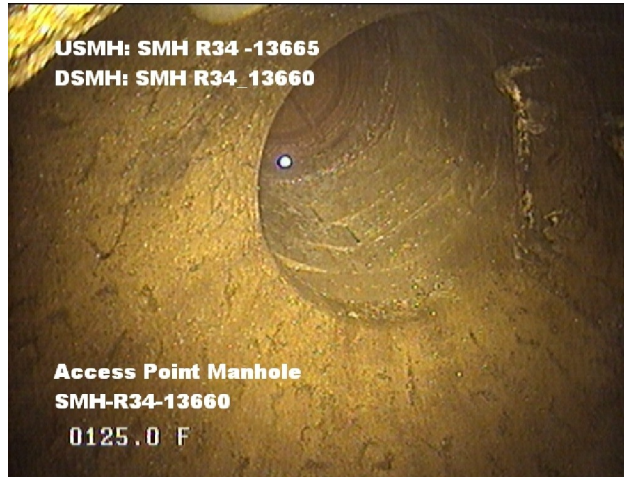
Distance: 105.5 ft. Grade: 0
Condition: Tap Saddle Active
Remarks: N/A



Distance: 117.9 ft. Grade: 2
Condition: Deposits Attached Ragging
Remarks: N/A

Image Report 4/Page

Pipe Segment Refere...	City	Street	Material	Location C...	Sewer Use
Sewer R34_13665	Waltham Mass	Juniper Hill Road	Asbestos Cement	Easement/R...	Sanitary
Upstream MH	Total Length	Year Laid	Shape	Location Details	
SMH R34 -13665	125		Circular	Behind # 55 Cliff	
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint...
SMH R34_13660	125		8	8	13



Distance: 125.0 ft. Grade: 0
Condition: Access Point Manhole
Remarks: SMH-R34-13660



Distance: 125.0 ft. Grade: 2
Condition: Deposits Attached Grease
Remarks: N/A

APPENDIX C

SECTIONS OF MASSACHUSETTS GENERAL LAWS

Total of 8 Sheets

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CHAPTER 30. GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES

Chapter 30: Section 39F. Construction contracts; assignment and subrogation; subcontractor defined; enforcement of claim for direct payment; deposit, reduction of disputed amounts

Section 39F. (1) Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the

subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors.

All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of

paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.

Chapter 30: Section 39K. Public building construction contracts; payments

Section 39K. Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph:— Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work

performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction,

reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.

Chapter 30: Section 39N. Construction contracts; equitable adjustment in contract price for differing subsurface or latent physical conditions

Section 39N. Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or

regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

Chapter 30: Section 39O. Contracts for construction and materials; suspension, delay or interruption due to order of awarding authority; adjustment in contract price; written claim

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act

to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

APPENDIX D
MASSDOT PRICE ADJUSTMENT CLAUSES

Total of 2 Sheets

- *Document 00812*
- *Document 00814*

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DOCUMENT 00812

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE –
ENGLISH UNITS

Revised: 01/26/2009

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in the Department's web site (www.mhd.state.ma.us) for the month in which the contract was bid, which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation; and Borrow Work: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144., 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY.	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

***** END OF DOCUMENT *****

DOCUMENT 00814

SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. This Price Adjustment will occur on a monthly basis.

The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges.

The Base Price of Portland cement on a project is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the **Construction Economics** section of *ENR Engineering News-Record* magazine or at the ENR website <http://www.enr.com> under **Construction Economics**. The Period Price will be posted on the MassHighway website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

The Contract Price of the Portland cement concrete mix will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed.

The price adjustment applies only to the actual Portland cement content in the mix placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement.

This Price Adjustment will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

*

END OF DOCUMENT

APPENDIX E
MWRA DISCHARGE PERMITS

Total of 19 Sheets

- *Request To Conduct a Root Control Project*
- *One-Time-Only Discharge Request (discharge from a CIPP process)*

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**MASSACHUSETTS WATER RESOURCES AUTHORITY
TOXIC REDUCTION AND CONTROL**

**2 GRIFFIN WAY
CHELSEA, MASSACHUSETTS 02150-3334**

**Request To Conduct
A Root Control Project**

Name of Municipality: _____

Name of the person from the Municipality to contact concerning the information provided herein. *(Please, sign page 2 of this questionnaire, without a signature from the municipality the MWRA will not be able to process this request.)*

Name: _____

Title: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

Person designated by the Municipality to receive correspondence from the MWRA regarding this project.

Name: _____

Title: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

1. Provide a description of the project.

2. Indicate the location and length (linear feet) of pipe to be treated?
Provide street name(s) and provide a map if applicable.

Page 2

3. Indicate the name of the active ingredient that will be used each day.

Provide the MSDS(s) for the chemical(s) that will be used.

4. Indicate the name and volume (gallons) of the solvent or water and the active ingredient to be used each day.

Solvent Name (provide the name)

Volume (gallons/day)

Active Ingredient Name

Volume (gallons/day)

5. The total pounds of solution (the active ingredient) to be used each day?
6. The total pounds of solution (the active ingredient) to be used for the entire project?
7. The total number of days the pipes will be treated?
Anticipated first day of the project: _____
Anticipated last day of the project: _____

8. The time of day for the treatment?

9. The amount of time (hours) the active ingredient will remain in the sewer pipe after the treatment process?

Signature (*Municipality*)

Date

PLEASE, ALLOW THREE WEEKS FOR PROCESSING THIS REQUEST



**MASSACHUSETTS WATER RESOURCES AUTHORITY
TOXIC REDUCTION AND CONTROL
2 GRIFFIN WAY
CHELSEA, MASSACHUSETTS 02150-3334**

One-Time-Only Discharge Request

To discharge from a Cured-in-Place Pipe (CIPP) Lining process as part of a sewer rehabilitation project into the Municipality or Authority sewerage system

Please, allow three weeks for processing this request

Name of Municipality: _____

Project Name: _____

Name of the person from the Municipality to contact concerning the information provided herein. *(Please, sign the signature page of this questionnaire, without a signature from the Municipality the MWRA will not be able to process this request.)*

Name: _____

Title: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

E Mail: _____

Contractor designated by the Municipality to conduct the project.

Name: _____

Title: _____

Company: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

E Mail: _____

MWRA Permit Number: _____

**Person designated by the Municipality to receive correspondence from the MWRA
regarding this project.**

Name: _____

Title: _____

Company: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

GENERAL INFORMATION:

Please answer all of the questions

(If more space is needed, attach additional pages).

a) *Cured-in-Place Pipe (CIPP) Liner is defined as a woven or non-woven or combination of woven and non-woven material surrounded or impregnated with resin which when installed and processed, forms to the shape and size of the interior walls of the host conduit as defined in ASTM Standard F1216.*

b) *Host Conduit is defined as the existing pipeline to be rehabilitated by CIPP Lining. The host conduit for this project must be indicated on the Contract Drawings.*

1. Indicate the project scope. Provide pipe location and pipe length and diameter of each pipe to be treated. Use a pipe identification naming scheme that references the drawings and that will be recognizable by all parties. Identify all of the connection (using the name provide in Attachment A of the MWRA Municipal Discharge Permit) of the receiving MWRA interceptor and submit a diagram and drawing that will trace the flow from the project pipe to the MWRA interceptor.

Project scope and location: _____

Pipe Location Sewer Connection of the receiving MWRA interceptor (Provide name in Attachment A of the MWRA Municipal Discharge Permit)	Pipe Length (Feet)	Pipe Diameter (Inches)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Indicate how you will conduct the pipe cleaning process prior to the lining process.

3. Indicate the proposed installation method that you will employ for the CIPP liner into the existing pipe.

4. Indicate all of the appropriate Federal, state, and local permits and approvals obtained for this CIPP project.

5. Submit the Materials Safety Data Sheet(s) for the CIPP lining materials.

6. Indicate all source(s) of wastewater curing/lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, and, etc to be discharged into MWRA sewer system from this project.

Wastewater Type(s)	Source(s)
Curing water	<hr/> <hr/>
Cooling water	<hr/> <hr/>
Rinsing water	<hr/> <hr/>
Pre-cleaning water	<hr/> <hr/>
Post-cleaning water	<hr/> <hr/>
Other (Describe) <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/>
Other (Describe) <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>

7. Describe the proposed pretreatment for the wastewater curing/lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, and, etc and provide equipment/flow diagram(s).

8. Indicate the storage method for treated and/or untreated curing\lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, etc, and provide its capacity in gallons prior to discharge into the MWRA sanitary sewer system.

Wastewater Type(s)	Storage method prior to discharge into MWRA sanitary sewer system.	Storage capacity (gallons)
Curing\lining process water		
Cooling water		
Rinsing water		
Pre-cleaning water		
Post-cleaning water		
Other (<i>Describe</i>) _____ _____		

9. Indicate proposed volume of wastewater (curing\lining process wastewater, cooling water, rinse water, pre-clean water, post-clean water, and, etc..) flow into the MWRA sewer system per day gallons per day (GPD).

Wastewater Type(s)	Volume(GPD) Discharge into MWRA sanitary sewer system	Pretreatment Yes/No	Pretreatment Type(s)
Curing\lining process water		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Cooling water		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Rinsing water		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Pre-cleaning water		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Post-cleaning water		Yes <input type="checkbox"/> No <input type="checkbox"/>	
Other (Describe) _____ _____		Yes <input type="checkbox"/> No <input type="checkbox"/>	

10. Describe other method(s) for the collection and disposal for the curing\lining process wastewater, cooling water, and/or rinse water if pretreatment is not viable, and the discharge to the MWRA sanitary sewer system is not authorized.

11. Indicate if solids will be generated from the treatment process, including solidified styrene and other solid byproducts. All solids must be removed from the cure water and subsequent cooling and rinsing operations, prior to discharge into MWRA sewer system, pursuant 360 C.M.R. 10.023(8).

12. Indicate proposed date(s) of discharge into the MWRA sewer system.

Anticipated first day of discharge: _____

Anticipated last day of discharge: _____

Proposed hours of discharge into MWRA sewer system: _____

13. Provide the construction schedule for the project including specific proposed date(s) and start and end times. If specific dates are not known, please use Day 1 (one) for taking the pipe out of service and count forward from there. If individual operating time will take less than twenty-four hours, specify start and end times in military time.

Action(s)	Date (mm/dd/yyyy)	Operating Time (hrs:min:sec)	Comments(s)
Taking pipe out of service			
Pre-cleaning of pipe (Start)			
Pre-cleaning of pipe (End)			
Line installation (Start)			
Line installation (End)			
Curing process (Start)			
Curing process (End)			
Cooling process (Start)			
Cooling process (End)			
Rinsing (Start)			
Rinsing (End)			
Return pipe to service			
Other (Describe)			

14. Indicate how you will ensure that sufficient capacity (gallons) at the construction zone in the event of a storm event. Describe how flow through the pipe will be diverted around the construction zone and provide rerouting plans, and pipe blockage techniques that you will employ. Specify materials that will be used and storage measures that will be employed.

15. CERTIFICATION STATEMENT AND SIGNATURE:

The questionnaire for a One-Time-Only Discharge Request must be signed and dated by an authorized representative. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the sewer system, a new authorization satisfying the requirements of this section must be submitted to the MWRA prior to or together with any reports to be signed by an authorized representative.

An authorized representative of a municipality includes:

- a) a responsible public official, including a Mayor, City Manager, Town Administrator, Chair of the Board of Selectman, District Manager, or any other person who performs similar policy or decision-making functions for the municipality, or the director, manager, or superintendent of the department responsible for operating or overseeing the operation of the sewer system, if authority to sign documents has been assigned or delegated to the individual in accordance with the municipality's procedures.
- b) the duly authorized representative of the individual designated in (a) of this section if:
 - i) the authorization is made in writing by the individual described in (a);
 - ii) the authorization specifies either an individual or a position having responsibility for the overall operation of the sewer system from which the discharge originates, such as the position of superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the municipality;
 - iii) the written authorization is submitted to the MWRA.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the sewer system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative

Please Print Name of Authorized Representative

Title

Date

PLEASE, ALLOW THREE WEEKS FOR PROCESSING THIS REQUEST

Do not alter this form

To discharge wastewater from a sewer pipe lining/curing project into the Authority sewer system. Submit the completed form to:

Massachusetts Water Resources Authority
Toxic Reduction and Control
2 Griffin Way, Chelsea MA 02150-3334
Attention: Kattia Thomas, Project Manager, Permitting

If you have any questions regarding the approval process, you may contact Kattia Thomas, at 617-305-5667.

ATTACHMENT B
MWRA ROOT CONTROL REQUEST PERMIT



MASSACHUSETTS WATER RESOURCES AUTHORITY
TOXIC REDUCTION AND CONTROL
2 GRIFFIN WAY
CHELSEA, MASSACHUSETTS 02150-3334

Request To Conduct
A Root Control Project

Name of Municipality: _____

Name of the person from the Municipality to contact concerning the information provided herein. *(Please, sign page 2 of this questionnaire, without a signature from the municipality the MWRA will not be able to process this request.)*

Name: _____

Title: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

Person designated by the Municipality to receive correspondence from the MWRA regarding this project.

Name: _____

Title: _____

Address: _____

Telephone No.: _____ Facsimile No.: _____

1. Provide a description of the project.

2. Indicate the location and length (linear feet) of pipe to be treated?
Provide street name(s) and provide a map if applicable.

3. Indicate the name of the active ingredient that will be used each day.
Provide the MSDS(s) for the chemical(s) that will be used.

4. Indicate the name and volume (gallons) of the solvent or water and the active ingredient to be used each day.

Solvent Name (provide the name)

Volume (gallons/day)

Active Ingredient Name

Volume (gallons/day)

5. The total pounds of solution (the active ingredient) to be used each day?
6. The total pounds of solution (the active ingredient) to be used for the entire project?

7. The total number of days the pipes will be treated?
Anticipated first day of the project: _____
Anticipated last day of the project: _____

8. The time of day for the treatment?

9. The amount of time (hours) the active ingredient will remain in the sewer pipe after the treatment process?

Signature (*Municipality*)

Date

FAX this page to Kattia Thomas, Proj. Mgr, Permitting, TRAC, the fax number is 617-371-1604.

PLEASE, ALLOW THREE WEEKS FOR PROCESSING THIS REQUEST

Submit your request for approval to use the foaming root control herbicide to Kattia Thomas, Project Manager, Permitting, Massachusetts Water Resources Authority, Toxic Reduction and Control, 2 Griffin Way, Chelsea MA 02150-3334. Also, you may fax the request to Ms. Thomas, the fax number is 617-371-1604.

If you have any questions regarding the approval process, you may contact Kattia Thomas, at 617-305-5667.