

THE CITY OF WALTHAM
MASSACHUSETTS

PURCHASING DEPARTMENT

Jennings Road Sewer Replacement and Drain Rehabilitation, 2021

ADDENDUM NO. 2

September 21, 2021

CHANGES, CORRECTIONS AND CLARIFICATIONS

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

THE NUMBER OF THIS ADDENDUM (NO. 2) MUST BE ACKNOWLEDGED ON YOUR PRICE SHEET.

ITEM 1: DELETE and REPLACE

Under Section 00100-5 Paragraph 1.17 – Time of Completion, DELETE “90 calendar days” and REPLACE with “150 calendar days.”

DELETE the current Table of Contents on Page 2 of the Original RFB and REPLACE with the attached revised Table of Contents.

DELETE the current Bid Form in Section 00300 of the Original RFB and REPLACE with the attached revised Bid Form.

DELETE and REPLACE pages of Measurement & Payment Section 01024-16 and 01024-17 (Pages 167 & 168)

ITEM 2: ADDITIONS

Add Attachment D for “Updated Gas Locations”

Add Attachment E for “Smoke/Dye Testing, CCTV Specifications and Locus Map”

Add Attachment F for “Additional Drain Segment Replacement”

ITEM 3: ANSWERS TO POSED QUESTIONS

Q1) – Is there any CIPP in the scope of work?

A1) – There is no CIPP lining work specified within this contract.

End of Addendum 2

JENNINGS ROAD
SEWER REPLACEMENT AND DRAIN REHABILITATION
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D	Updated Gas Main Location Sketch
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F	Additional Drain Segment Replacement

END OF SECTION

SECTION 00300

BID FORM

To the City of Waltham, Massachusetts, acting through its Department of Engineering:

Regarding: Jennings Road Sewer Replacement and Drain Rehabilitation

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, 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 site of 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 Drawings, the annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;
- The Bidder 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 their 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 on the Drawings or in any of the other Contract Documents and agrees that the Bidder shall not use or be entitled to use any such information made available to the Bidder through the Contract Documents or otherwise or obtained by the Bidder in their 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 the Bidder 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;
- The Bidder understands that the quantities of work tabulated in this BID or indicated on the Drawings or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer;

- The Bidder 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.

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**Jennings Road Sewer Replacement and Drain Rehabilitation**

The work of the General Bidder, being all work covered by items 1 through 28, inclusive.

Item No.	Item Description and Unit Price in Words	Units	Estimated Quantity	Unit Price (In Figures)	Extended Amount (In Figures)
1	Mobilization and Demobilization	LS	1		
	Dollars and _____ Cents				
2a	10-inch, PVC SDR 35 Sewer Pipe	LF	15		
	Dollars and _____ Cents				
2b	8-inch, PVC SDR 35 Sewer Pipe	LF	2,450		
	Dollars and _____ Cents				
2c	6-inch, PVC SDR 35 Sewer Service Pipe	LF	700		
	Dollars and _____ Cents				
2d	4-inch, PVC SDR 35 Sewer Service Pipe	LF	900		
	Dollars and _____ Cents				
3a	4-foot Diameter Sewer Manhole	VF	145		
	Dollars and _____ Cents				
3b	5-foot Diameter Sewer Manhole	VF	10		
	Dollars and _____ Cents				
3c	Sewer Manhole Frame and Cover	EA	17		
	Dollars and _____ Cents				
4a	24-inch, RCP Drain Pipe	LF	60		
	Dollars and _____ Cents				
4b	15-inch, RCP Drain Pipe	LF	425		
	Dollars and _____ Cents				
5	Heavy Clean (Mechanical) Drain Pipe	LF	1,400		
	Dollars and _____ Cents				
6a	AC Pipe Removal and Disposal	LF	120		
	Dollars and _____ Cents				
6b	Management and Disposal of Crushed AC Pipe and AC Impacted Soils	CY	10		
	Dollars and _____ Cents				

Item No.	Item Description and Unit Price in Words	Units	Estimated Quantity	Unit Price (In Figures)	Extended Amount (In Figures)
7	Relocate 6" Water Main _____ Dollars and _____ Cents	LF	100		
8	Remove 6" CI WM at Intersection of Woodland Road and Prospect Hill Road _____ Dollars and _____ Zero Cents	LS	1		
9a	1-inch Type K Copper Tubing _____ Dollars and _____ Cents	LF	500		
9b	2-inch Type K Copper Tubing _____ Dollars and _____ Cents	LF	20		
10a	1-inch service taps, including corporations, fittings, curb stops and boxes _____ Dollars and _____ Cents	EA	24		
10b	2-inch service taps, including corporations, fittings, curb stops and boxes _____ Dollars and _____ Cents	EA	1		
11	Additional Excavation and Backfill Below Normal Grade _____ Dollars and _____ Cents	CY	125		
12	Exploratory Excavation (Test Pits) _____ Dollars and _____ Cents	CY	40		
13a	Additional Common Fill _____ Dollars and _____ Cents	CY	1,000		
13b	Additional Select Fill _____ Dollars and _____ Cents	CY	500		
13c	Controlled Density Fill _____ Dollars and _____ Cents	CY	50		
13d	Additional Crushed Stone _____ Dollars and _____ Cents	CY	50		
14	Rock Excavation _____ Dollars and _____ Cents	CY	350		
15	Miscellaneous Concrete _____ Dollars and _____ Cents	CY	25		

Item No.	Item Description and Unit Price in Words	Units	Estimated Quantity	Unit Price (In Figures)	Extended Amount (In Figures)
16a	Wheelchair Ramps	SY	110		
	Dollars and _____ Cents				
16b	New Granite Curbing	LF	75		
	Dollars and _____ Cents				
16c	Remove and Reset Granite Curbing	LF	195		
	Dollars and _____ Cents				
17a	4-inch Temporary Trench Pavement	SY	3,430		
	Dollars and _____ Cents				
17b	1.5" Milling (Full Width)	SY	5,960		
	Dollars and _____ Cents				
17c	Bituminous Berm/Curb	LF	50		
	Dollars and _____ Cents				
17d	1.5" Overlay (Full Width)	SY	5,960		
	Dollars and _____ Cents				
17e	1.5" Milling and Permanent Trench Pavement	SY	860		
	Dollars and _____ Cents				
17f	Miscellaneous Pavement for Sidewalks and Driveways	SY	570		
	Dollars and _____ Cents				
18	Calcium Chloride (50-lbs Bag)	EA	30		
	Dollars and _____ Cents				
19	Landscaping	SY	200		
	Dollars and _____ Cents				
20	Silt Sack	EA	24		
	Dollars and _____ Cents				
21	Rodent Control	LS	1		
	Dollars and _____ Cents				
22	Uniformed Police Officer Allowance	Allow.	\$115,200	\$115,200	\$115,200
	Dollars and _____ Cents				
23	Traffic Management	LS	1		
	Dollars and _____ Zero Cents				

Item No.	Item Description and Unit Price in Words	Units	Estimated Quantity	Unit Price (In Figures)	Extended Amount (In Figures)
24	Miscellaneous Work and Cleanup Dollars and _____ Cents	LS	1		
25	Smoke Testing & Dye Testing Dollars and _____ Cents	LS	1		
26	Abandon Existing Drain Line Dollars and _____ Cents	EA	4*		
27	CCTV Inspection of Sewer & Drain (6" through 24" diameter) Dollars and _____ Cents	LF	500*		
28	Heavy Cleaning (All Diameters) Dollars and _____ Cents	LF	150*		
				Total	\$

*Indeterminite quantities are not guaranteed. Payment shall be based upon actual quantities constructed and accepted.

TOTAL BASE BID

\$ _____

(Amount in figures)

(Amount in words)

Total Amount of Base Bid (Item 1 through 28 inclusive). Basis of Award:

Basis of Award: The basis of award shall be at the Owner's sole discretion, contingent on the Base Bid Price. The grand total of the Base Bid, Items 1 through 28 inclusive, will be used to determine the lowest responsive Bidder. 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 11 of the General Conditions of the Contract and will be paid for in accordance with Article 13 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 **150 calendar days** for the Base Bid, as stipulated in the AGREEMENT. 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)

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 and Project Reference List (Section 00300)
- Completed Form of Non-Collusion Affidavit
- Completed Certificate of Corporate Vote (Corporation Only)
- Completed Certificate as to Payment of State Taxes
- Completed Certificate of 10 Hour OSHA Training

The Bidder is required to list five or more of your firm's recent projects of a similar to be deemed an acceptable bid. References will enable the Owner to judge his experience, skill, and business standing.

Project Name:	_____
Project Location:	_____
Contract Amount: \$	_____ Completion Date _____
Owner:	_____
Contact Name:	_____ Telephone: _____
Architect/Engineer:	_____
Contact Name:	_____ Telephone: _____

Project Name:	_____
Project Location:	_____
Contract Amount: \$	_____ Completion Date _____
Owner:	_____
Contact Name:	_____ Telephone: _____
Architect/Engineer:	_____
Contact Name:	_____ Telephone: _____

Project Name:	_____
Project Location:	_____
Contract Amount: \$	_____ Completion Date _____
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Architect/Engineer:	_____
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Project Name:	_____
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Contract Amount: \$	_____ Completion Date _____
Owner:	_____
Contact Name:	_____ Telephone: _____
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Contact Name:	_____ Telephone: _____

Project Name:	_____
Project Location:	_____
Contract Amount: \$	_____ Completion Date _____
Owner:	_____
Contact Name:	_____ Telephone: _____
Architect/Engineer:	_____
Contact Name:	_____ Telephone: _____

Add supplementary page if necessary.

END OF SECTION 00300

- and community meetings, and coordination of all construction activities with the appropriate local authorities and utilities. Obtaining necessary permits and licenses, and payment of associated fees, if any.
- c. 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.
 - d. Maintenance and repair of all work for one (1) year period.
 - e. 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 and 29 CFR 1926.
 - f. Implementation of the Health and Safety Plan.
 - g. Erosion Control measures to prevent exposed fill, excavated material, or other materials from washing away or otherwise eroding from slopes or into wetlands.
 - h. Temporary facilities.
 - i. Construction Photographs. Including pre-construction photographs of project area.
 - j. Field verification of all existing utilities.
 - k. Provide a complete set of "red-line" record drawings to the Engineer and City of Waltham prior to substantial completion.
 - l. Providing material testing, laboratory analysis of materials, and quality assurance testing for earthwork and concrete activities.
 - m. Coordination of all construction activities with the Engineer and City of Waltham.
 - n. Contract closeout and all other project related direct and indirect costs not described above.
 - o. Removal and disposal of existing sanitary sewer manhole structures not proposed to be replaced.

Z. Item 25: Smoke Testing & Dye Testing

1. Under the lump sum price for this Item, the Contractor shall provide all general services, labor, materials, consumables, documentation, reporting, investigation, and equipment necessary to complete smoke testing investigations and follow up dye testing within the area identified and as specified in Attachment E.

2. Measurement for payment of the lump sum price for Item 25 shall be on a percent of the Lump Sum bid proportionate to the services delivered and accepted as determined by the Engineer.

AA. Item 26: Abandoning of Existing Drain Line

1. Measurement for payment under the unit price for Item 26 shall be the number of drain lines cut can capped in place as directed by the Engineer.

2. Payment under Item 26 as specified will be made at the Contract unit price stated in the Bid Proposal for the quantities as measured. The Contractor shall furnish all labor, materials, tools, equipment, and incidentals required for abandoning existing drain lines, complete and as directed by the Engineer. Payment shall be considered full compensation for providing cutting and removing existing pavement; trench excavation (except rock excavation covered in Item 14); dewatering including installation of dewatering systems, proper discharge of ground water as specified herein; support of excavation, bedding with crushed stone for pipe; backfilling with suitable material, compaction as shown on the Typical Trench Detail and steel plating prior to final paving; restoring the trench surface to grade needed for trench pavement including sub-base; all restoration required within the trench limits; protection or temporary removal and replacement of existing utilities and structures; laying, jointing, water for construction; providing a permanent water-tight plug on each exposed pipe end; bracing the plug; flow handling; fittings and gaskets including couplings, access to compacted backfill for compaction testing; and all incidental work, including driving and removing sheeting and bracing; removal and disposal of excess excavated material from the jobsite; and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form.

AB. Item 27: CCTV Inspection of Sewer & Drain (6" through 24" diameter)

1. Refer to Specifications outlined in Attachment E.

AC. Item 28: Heavy Cleaning of Sewer & Drain (All diameters)

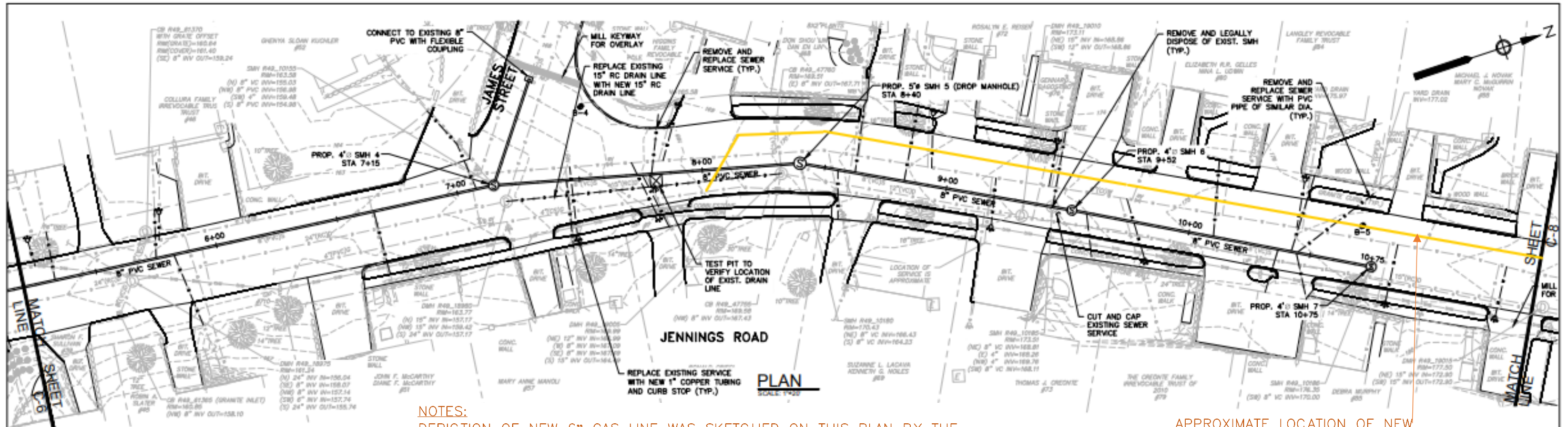
1. Refer to Specifications outlined in Attachment E.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

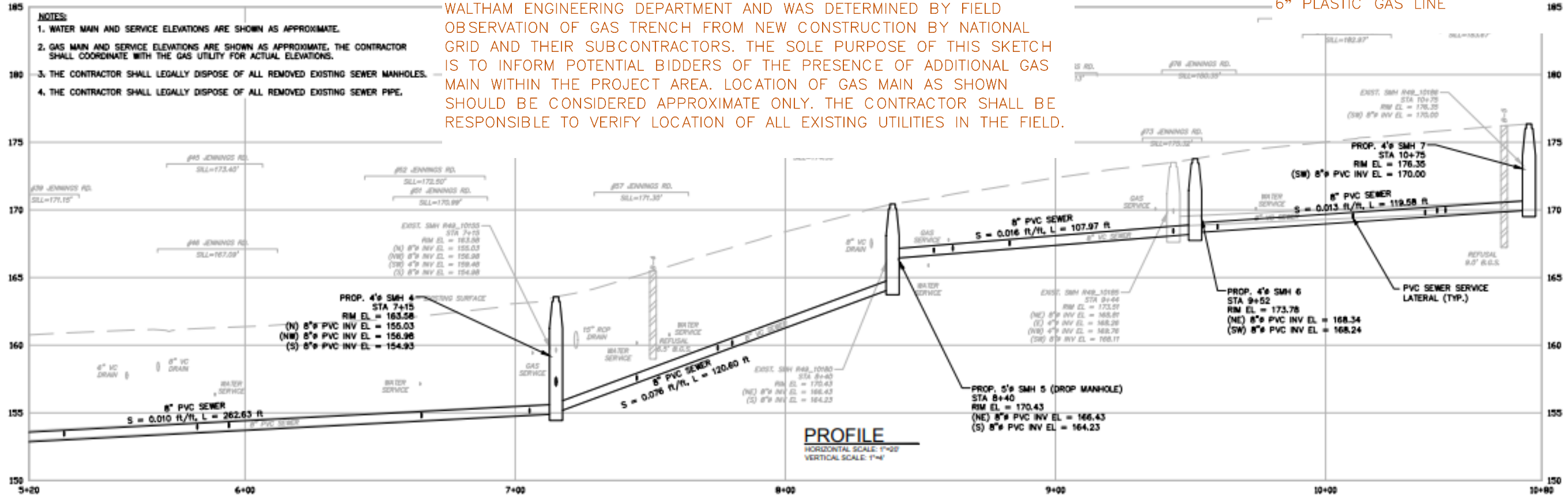
ATTACHMENT D

**Updated Gas Main
Location Sketch**



NOTES:
 DEPICTION OF NEW 6" GAS LINE WAS SKETCHED ON THIS PLAN BY THE WALTHAM ENGINEERING DEPARTMENT AND WAS DETERMINED BY FIELD OBSERVATION OF GAS TRENCH FROM NEW CONSTRUCTION BY NATIONAL GRID AND THEIR SUBCONTRACTORS. THE SOLE PURPOSE OF THIS SKETCH IS TO INFORM POTENTIAL BIDDERS OF THE PRESENCE OF ADDITIONAL GAS MAIN WITHIN THE PROJECT AREA. LOCATION OF GAS MAIN AS SHOWN SHOULD BE CONSIDERED APPROXIMATE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY LOCATION OF ALL EXISTING UTILITIES IN THE FIELD.

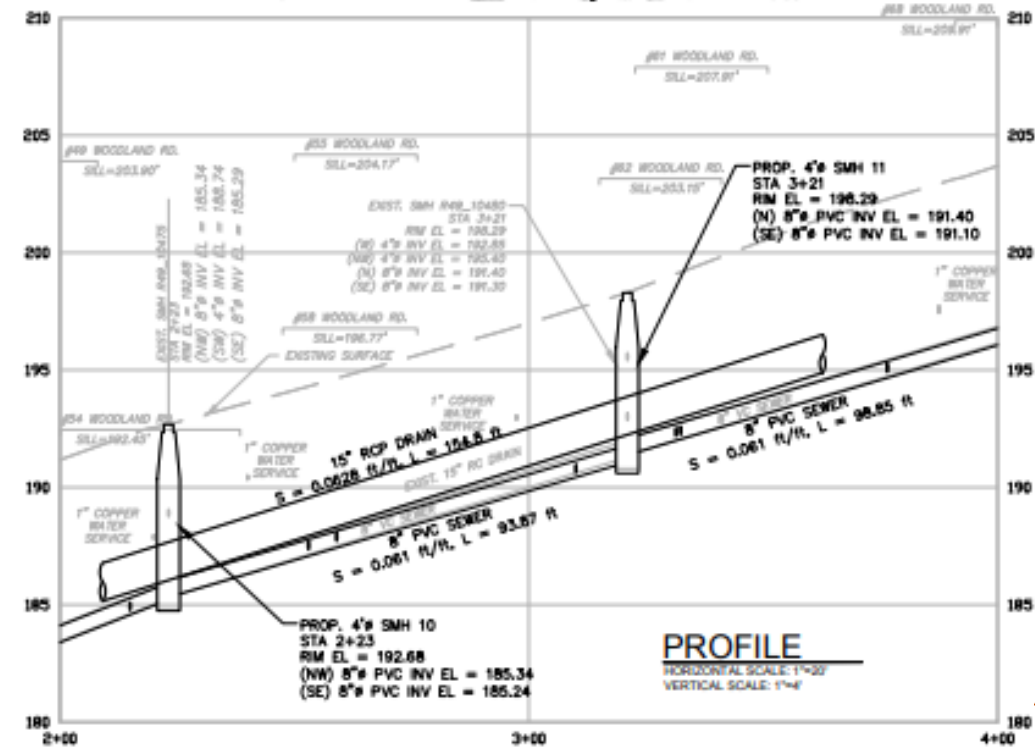
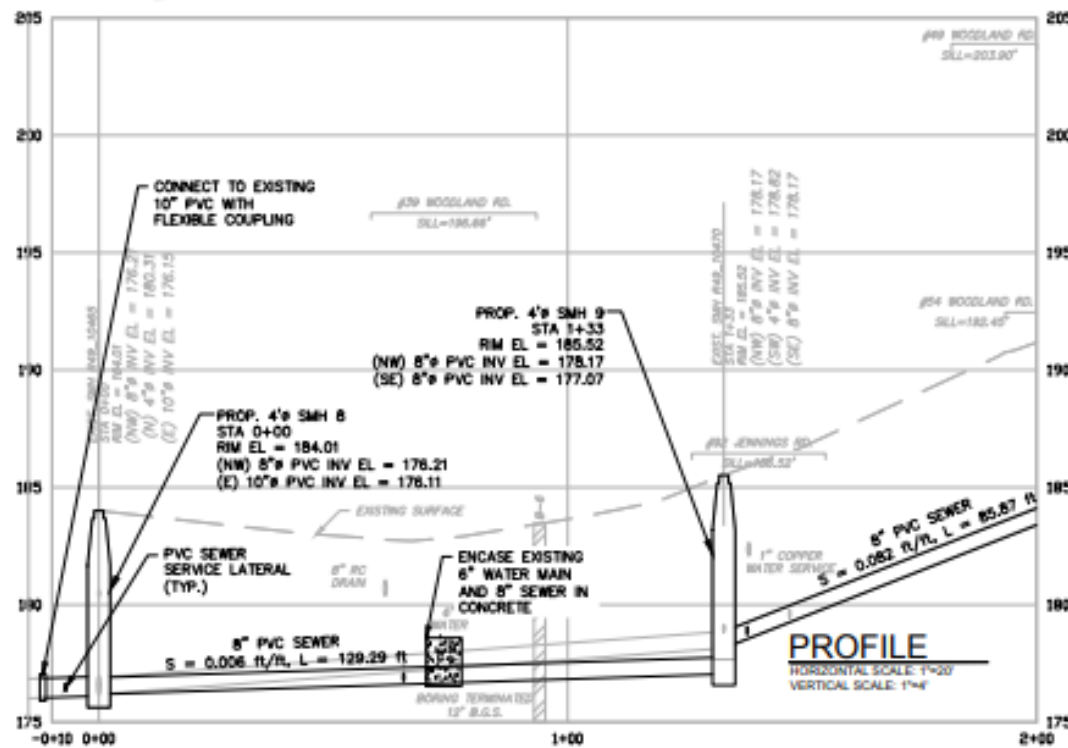
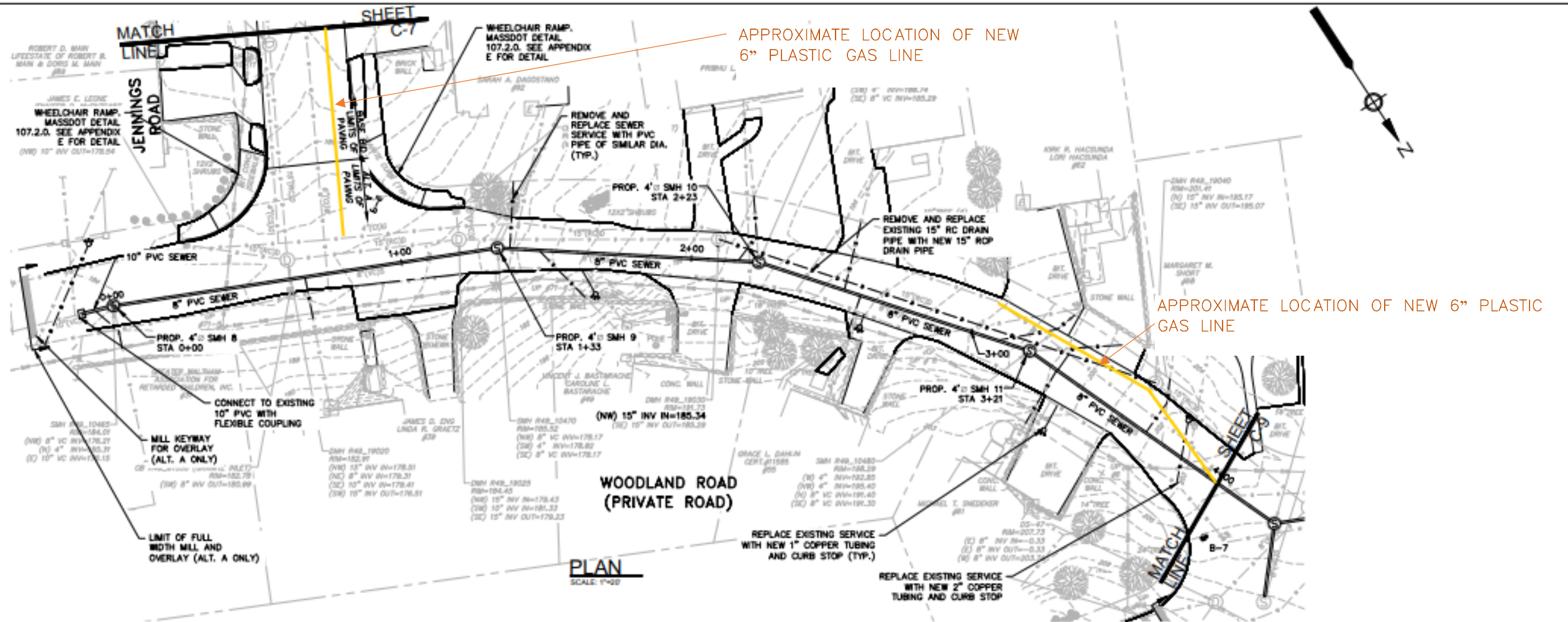
APPROXIMATE LOCATION OF NEW 6" PLASTIC GAS LINE



APPENDIX F: SHEET 1 OF 3

					N.T.S	JENNINGS ROAD SEWER REPLACEMENT AND DRAIN REHABILITATION CITY OF WALTHAM, MASSACHUSETTS	FOR CONSTRUCTION									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Scale</td><td>AS NOTED</td></tr> <tr><td>Date</td><td>MAY 2019</td></tr> <tr><td>Job No.</td><td>253-1702</td></tr> <tr><td>Designed by</td><td>RJP/SLC</td></tr> <tr><td>Drawn by</td><td>SLC</td></tr> <tr><td>Checked by</td><td>PCM</td></tr> <tr><td>Approved by</td><td>RJP</td></tr> </table>	Scale	AS NOTED		Date	MAY 2019	Job No.	253-1702	Designed by	RJP/SLC	Drawn by	SLC	Checked by	PCM	Approved by
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- NOTES:**
1. WATER MAIN AND SERVICE ELEVATIONS ARE SHOWN AS APPROXIMATE.
 2. GAS MAIN AND SERVICE ELEVATIONS ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE WITH THE GAS UTILITY FOR ACTUAL ELEVATIONS.
 3. THE CONTRACTOR SHALL LEGALLY DISPOSE OF ALL REMOVED EXISTING SEWER MANHOLES.
 4. THE CONTRACTOR SHALL LEGALLY DISPOSE OF ALL REMOVED EXISTING SEWER PIPE.
 5. UNDER THE BASE BID, TRENCHES ON WOODLAND ROAD WILL BE PAVED WITH PERMANENT PAVING. BID ALTERNATE A INCLUDES FULL WIDTH MILL AND OVERLAY OF WOODLAND ROAD.

APPENDIX F:
SHEET 2 OF 3



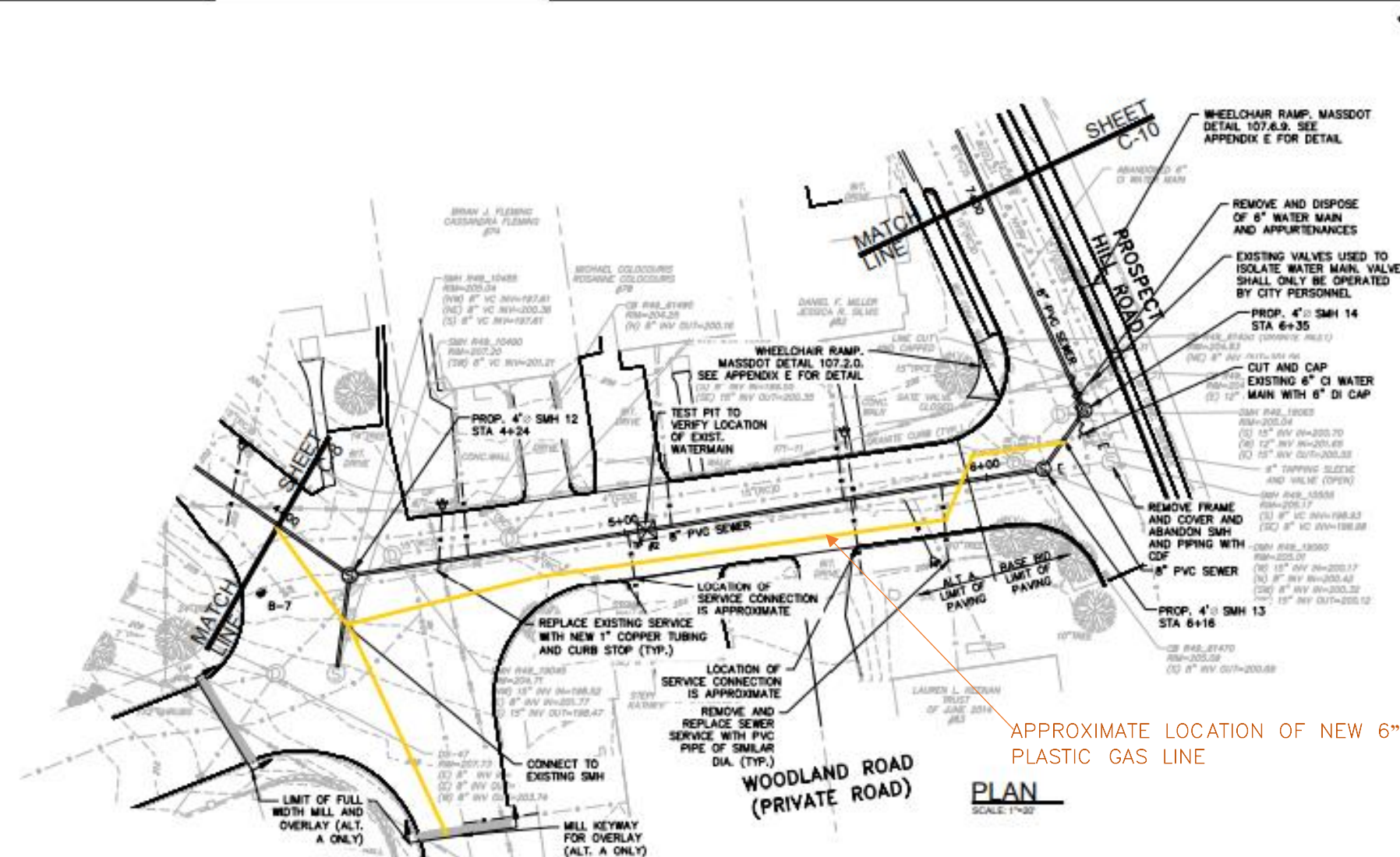
Environmental Partners
 A partnership for engineering solutions.

MARK	DATE	DESCRIPTION

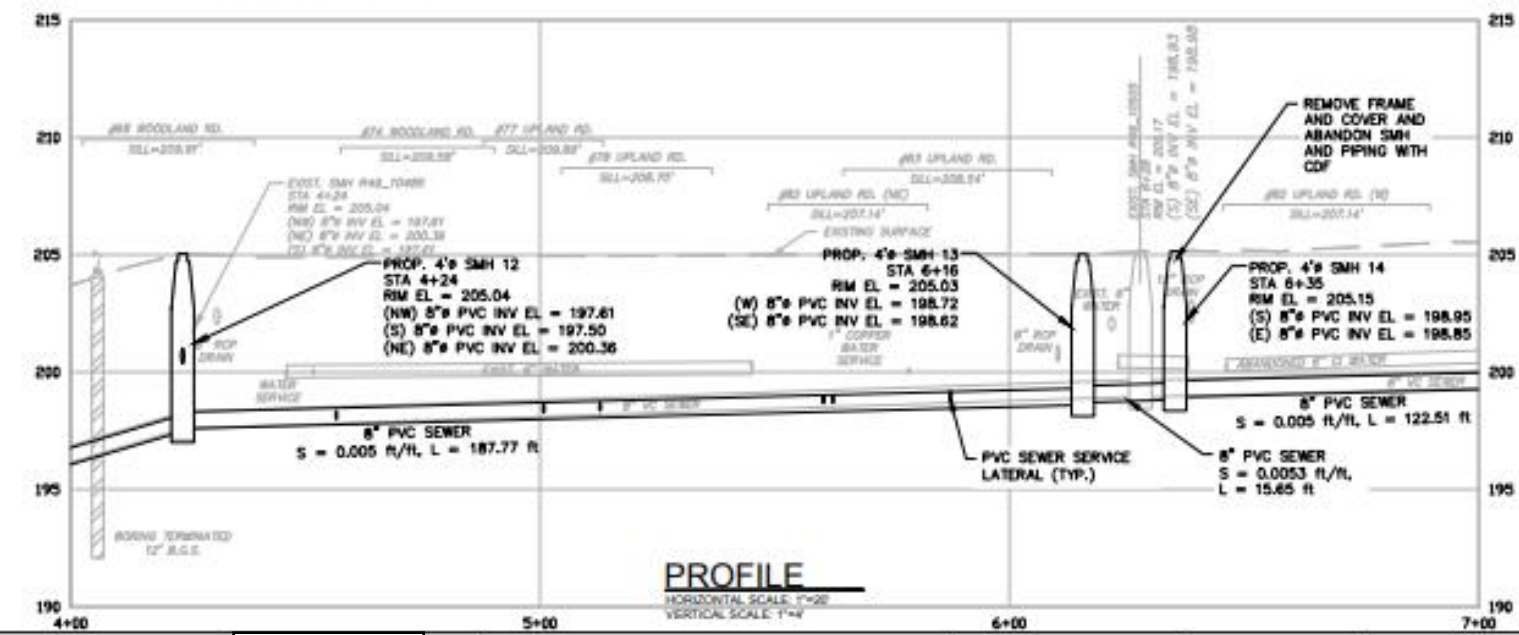
N.T.S

JENNINGS ROAD
 SEWER REPLACEMENT AND DRAIN REHABILITATION
 CITY OF WALTHAM, MASSACHUSETTS
 WOODLAND ROAD
 SEWER AND DRAIN REPLACEMENT
 STA 0+00 TO STA 4+00

FOR CONSTRUCTION
 Sheet No.
C-8



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APPENDIX F: SHEET 3 OF 3



MARK	DATE	DESCRIPTION

Scale	AS NOTED
Date	MAY 2019
Job No.	253-1702
Designed by	RJP/SLC
Drawn by	SLC
Checked by	PCM
Approved by	RJP

N.T.S

**JENNINGS ROAD
SEWER REPLACEMENT AND DRAIN REHABILITATION
CITY OF WALTHAM, MASSACHUSETTS**

**WOODLAND ROAD
SEWER REPLACEMENT
STA 4+00 TO STA 7+00**

FOR CONSTRUCTION
 Sheet No.
C-9

ATTACHMENT E

**Smoke Testing, Dye Testing,
& CCTV Inspection
Area Locus Map
&
Specifications**

2.0 SMOKE TESTING SPECIFICATIONS

2.1 SCOPE OF WORK

This specification covers the work necessary to conduct smoke testing to locate sources of inflow and infiltration within the designated mainline segments and attached properties. Also covered is follow-up on-site introduction of smoke, which might be necessary when the mainline smoke-testing does not produce conclusive results on an individual property. This is to be considered a minimum performance threshold, and the Contractor is encouraged to recommend additional or stronger provisions. If the Contractor feels that any provisions herein are excessive, unnecessary or ineffective, this should be brought to the City's attention prior to submitting a proposal.

2.2 PUBLIC NOTIFICATIONS

A. Emergency Phone Number

The Contractor shall provide an emergency phone number for the public to use, which will reach a live person 24 hours a day, seven days a week. That live person must be able to reach the primary contact person for the Contractor to notify them of emergencies.

B. Initial Notification Letter

1. The Contractor shall work with the City Engineer to develop a Notification Letter to all residents in subject neighborhoods, explaining how the inspection process will affect them, including the requirement for residents to allow City workers onto their private properties, and containing answers to commonly asked questions. It shall include the emergency phone number, prominently displayed, as well as reference to the City's web page for this project. It shall also inform residents who may not be directly affected, but who may observe the smoke, not to worry.
2. The Contractor shall provide a preliminary draft, based on experience in similar communities, which the City Engineer will review and revise as deemed appropriate.
3. Two (2) weeks prior to commencing Smoke Testing the Contractor shall mail out the Notification Letter to all targeted residents.

C. Door Hangers

1. Forty eight (48) hours prior to smoke testing, the Contractor shall distribute to the residences being tested a notification alerting the inhabitants that smoke testing is about to be conducted at their property. It shall contain a brief reminder of what they should do beforehand and what to expect during the test, and the emergency phone number shall be prominently displayed (it may have printing on both sides).
2. The Door Hangers shall be at least 3½" wide and 8½" high, and shall use eye-catching colors to attract attention. They shall be placed on the front entry door and at least one garage door of each residence. If unable to enter a property, the door hanger shall be affixed securely and prominently to the driveway gate.
3. The proposed door hanger shall be presented to the Engineer for approval before the Notice to Proceed will be issued.

D. Emergency Services

The Contractor shall contact all emergency services each day to alert them of the locations to be tested on the following day.

E. “Persons of Concern”

The Contractor and the City Engineer shall collaboratively maintain a list of residences with particular sensitivities, such as bedridden patients and house-confined invalids, day-sleepers, persons with respiratory problems, households with vulnerable pets, and any other situations that require special treatment, and it shall be updated daily as residents notify the City or the Contractor of their special needs. Before conducting a smoke test on a residence on this list, Contractor shall take whatever additional precautions are necessary to accommodate the inhabitants.

F. Temporary Street Signs

Contractor’s crew should place temporary signs on the roadway in the vicinity of their operation so that passing motorists will not be unnecessarily alarmed by smoke releases they observe.

2.3 SMOKE TESTING MATERIALS, EQUIPMENT & PROCEDURES

A. Personnel

1. A smoke testing crew shall be comprised of a sufficient number of persons to generate and distribute the smoke while simultaneously examining the subject properties thoroughly and conducting Traffic Control as necessary. It may be necessary for multiple crews to be working simultaneously in order to complete the work in the time allowed.
2. Personnel conducting smoke testing shall be properly trained in the use of the equipment and procedures. Each of them shall have a documented minimum of six (6) months of direct first-hand experience prior to starting this project.
3. Crews shall take all proper precautions in conducting the smoke testing.

B. Equipment

1. The manhole blower shall be a high-volume, low-pressure (HVLP) fan designed and built specifically for sewer system smoke testing, with appropriate adapters to seal to the City’s manholes with minimal leakage. It shall have a free-air delivery capacity of at least 1700 CFM and be capable of maintaining a positive pressure within the system sufficient to expel smoke from the most distant open vent stack continuously until the testing is completed. ***It shall not be operated so as to force water out of properly installed and maintained plumbing traps*** connected to the system.
2. If significant amounts of smoke are escaping around the edges of the blower, it may be required to place a sealing gasket of some kind between the edges of the blower and the manhole frame.
3. If a backflow prevention device cannot be safely removed, or if for any other reason smoke cannot flow up a lateral in sufficient quantity to produce conclusive results, a blower designed to introduce smoke through a cleanout or other small-diameter opening shall be used in that particular lateral system. The City’s Inspector shall make the determination of the need for such follow-up work.
4. The Contractor shall provide all other equipment, tools and incidentals necessary to perform smoke testing as described in these Special Provisions and as directed by the City

Engineer, including but not limited to plugs, photo-imaging and measuring equipment, forms, personal protective gear, and confined-space entry and self-rescue equipment, all in good working condition.

C. Smoke Products

1. The smoke shall be non-toxic, non-staining, and non-explosive, white to light gray in color, produced by chemical reaction from safe, stable components, and shall dissipate quickly leaving no residue.
2. Liquid or solid smoke sources may be used. It is recommended that the Contractor's crews have both types of products available and be ready to use either or both as appropriate to conditions encountered.
3. Sufficient smoke volume shall be generated to completely fill the sewer main and laterals being investigated and to clearly identify any points of release in addition to roof vents.
4. Contractor shall submit product data, including MSDS and manufacturer's recommendations for applications, storage, and handling, to the City Engineer for review and approval two weeks prior to commencing smoke testing.

CI. Distribution of Smoke

1. The maximum allowable setup length shall be no more than a two adjacent reaches at a time, unless the reaches are unusually short. If a stretch of mainline is serviced by intermediate cleanouts rather than manholes, the entire manhole-to-manhole stretch may have to be tested at once.
2. In order to isolate the sewer segment to be tested, partial blocking shall be preferred. If sandbags or plugs are used, care must be taken to prevent surcharging in the system. Plugs shall not be placed in the inlet side of the upstream manhole. If the outlet at the downstream manhole has been plugged a continuous watch may be necessary. Bypass pumping is discouraged.
3. Prior to introducing smoke into a sewer segment, the sewer gas within the segment shall be removed by opening both manholes and using the blower, in either positive or negative pressure mode, to displace the existing atmosphere with fresh air. The atmosphere within a manhole shall be checked for toxicity when the lid is removed.
4. Prior to introducing smoke into a sewer segment, any backflow-prevention devices on laterals connected to that segment must be removed if they can be removed without damage (*NOTE: due to the potential for liability arising from future failures of backflow-prevention devices, it is imperative that the condition of the device, and its proper replacement after the test, are to be thoroughly documented.*)
5. Smoke shall be continuously introduced into the setup until adequate coverage has been obtained and a visual inspection of the area being tested has been completed. Testing crews shall ascertain that adequate smoke coverage has been obtained by observing smoke concentrations at house plumbing vents within the setup.
6. If the City's Inspector determines that there is not sufficient smoke at a house, despite the introduction ample quantities of solid and liquid products, the Contractor's crew shall conduct a follow-up on-site smoke testing procedure through an accessible cleanout between the main and the house. A portable blower designed for this shall be set up at an accessible cleanout or plumbing device to introduce smoke directly into the lateral.

E. Inspection

1. Testing crews shall inspect all connected lines and surface areas along the mainline section being tested. In addition to examining the landscaping between the lateral tie-in and the structure it serves, the features to be inspected include but are not limited to abandoned and supposedly disconnected sewer laterals, cleanouts, manholes, driveway drains, patio and area drains, foundation drains, retaining wall drains, barbecue and exterior wetbar sinks, roof gutters, at-grade rain-leader connections, downspouts piped underground, street gutters, and storm drain inlets.
2. When cross-connections are discovered, the crew shall document them as described in Section 2.04 below.
3. It is recommended that smoke testing be conducted during hours of relatively low flow.
4. Testing shall not be done when unfavorable weather conditions (breeze or precipitation) would interfere with obtaining good results.
5. Personnel shall be in constant communication via portable radios.
6. If a cross-connection is discovered, and it is unclear which fixtures are connected, a follow-up dye test, and/or a follow-up video inspection will be required.

2.4 DOCUMENTATION

A. Field Reports

1. The crews shall produce digital photographic and tabular records of every identifiable smoke release point.
2. Photographs of smoke releases shall include a whiteboard on which identifying information has been hand-written for that specific photograph, including date, time, property address, and reference ID for the specific location of the release.
3. A Global Positioning System (GPS) instrument shall be used to record the geographic locations of features and observations recorded.
4. Wherever a source of I&I is discovered, the tributary area contributing rainwater to this source is to be estimated (in square feet) and noted in the documentation for that source.
5. The individual Plot Plans for each property, which will be provided to the Contractor by the City Engineer, shall be marked-up using the symbols in the accompanying Legend, showing:
 - a. Date, day and time that the inspection of the property was started;
 - b. Observed street address of the property (if different than shown on the Plot Plans);
 - c. Public Works Permit number (PWP#);
 - d. Actual location of the sewer main and manholes serving the property if different than shown;
 - e. The locations of detected sources of I&I or sewer flow into the drainage system, with their reference ID's (both on public and private property);
 - f. Indications of important physical features referenced in the photographic and/or

narrative descriptions of discovered cross-connections;

- g. Locations of existing backflow prevention devices and cleanouts;
 - h. Prominent indications of manholes and cleanouts shown that could not be found;
 - i. The Plot Plan mark-ups produced during smoke testing will be further marked-up during dye-testing and video inspections if needed. They will also be used during video inspections. Additional information will be added during video inspections, including cleanout locations, bends and junctions, major defects, and the locations of the lateral connections to the mains.
6. A Field Log shall be produced for each property, noting in narrative form:
- a. Street address of the property;
 - b. Public Works Permit number (PWP#);
 - c. Date, day and time that the inspection of the property was started;
 - d. General weather conditions;
 - e. Documentation of condition and specific action taken with any backflow prevention devices;
 - f. For each smoke release, provide:
 - i. A unique reference ID that will correlate among the Field Log, the Site Sketch, the photograph and the digital database
 - ii. The manhole segment being tested, identified by the City's convention of "upstream manhole" _ "downstream manhole" (ie. SSMH6K3_SSMH6K4)
 - iii. The geographic location of the release;
 - iv. The type of release;
 - v. The severity of the release, based on a range of three levels;
 - vi. A brief description of the release, particularly indicating if it is evidently a prohibited connection;
 - g. The Field Log for each property shall present the numbers of releases of each different type being recorded; it shall also describe all dye testing and/or video inspections done.
 - h. The approximate length and size of each lateral, determined by the cleanouts found;

B. Digital Database

- 1. The Contractor's digital database shall provide a separate record for each sewer and drain main segment tested and separate records for each of the properties connected to it.
- 2. Each record shall link to all of the individual Field Logs, Plot Plans, videos, photographs and any other documentation for the segment or the property.
- 3. Records will be sorted by segment ID's or by property addresses.
- 4. Plot Plans, Field Logs and all other notes, videos and photographs shall be entered into the Contractor's digital database daily. The updated database shall be conveyed to the City for review with each Application for Payment, but no less frequently than monthly.

3.0 DYE TESTING SPECIFICATIONS

3.1 SCOPE OF WORK

If smoke testing results are not conclusive, the City's Inspector may direct the Contractor to conduct follow-up dye testing to confirm or rule-out potential I&I or illicit connection sources. Contractor shall notify residents whose properties will be subject to dye testing 1 week prior to date of testing to schedule required access.

DYE TESTING MATERIALS, EQUIPMENT & PROCEDURES

3.2

A. Products

1. Dye used shall be non-toxic, water soluble, biodegradable, and EPA-approved for this purpose. ANSI/NSF Standard 60 certification is preferred.
2. Liquid, power or solid products must be pre-dissolved and pre-diluted prior to bringing them onto a site.
3. The Contractor's crew shall have three colors of dye available in order to check multiple suspected inflow sources without having to wait for previously-introduced dye to dissipate completely.
4. Dyes must be capable of being color-neutralized with ordinary materials such as chlorine bleach, which shall be present when the dye is introduced into the suspected source.

B. Release of Dye

1. Liquid dye is to be introduced into the suspected source, and a member of the Contractor's crew will watch for it at the manhole that the property's lateral is connected to (or at the manhole below where that property's lateral is connected to the main).
2. At a suspected source of inflow, care shall be taken to avoid spilling or splashing dye onto adjacent surfaces; grates shall be removed from drains and roof leader connections shall be disconnected if possible. Any accidental staining shall be immediately neutralized.

C. Inspection

1. When dye is introduced into a suspected source of I&I or illicit connection, a member of the Contractor's crew shall attempt to locate its possible release to the surface rather than to the sewer lateral.
2. A crew member shall also be posted at the manhole with a portable light of sufficient intensity to see clearly if dye is present.
3. Personnel shall be in constant communication via portable radios.

3.3 DOCUMENTATION

A. Field Records

1. The specific location of each dye introduction shall be carefully noted on the Plot Plan for the subject property, and it shall be noted if the cross-connection to the sewer or drain is confirmed.
2. A photograph shall be taken that clearly shows the location of the dye introduction in the

- context of its surroundings, so that the particular location is unmistakable.
3. The record for the subject property may reference multiple dye test locations and their results.

B. Digital Database

The results of dye testing shall be recorded in the digital database established for the subject property.

A. GENERAL REQUIREMENTS

The contractor shall furnish all materials, equipment, gauges, pumps, etc. for performing work under this item. For sewer construction projects (new or rehabilitation), a sketch will be required to show any deviation from the design drawings.

B. PIPE CLEANING

The Contractor may elect to use either high velocity jet, or mechanically powered equipment, as described in the NASSCO Standard Specifications. Selection of equipment shall be based upon field conditions such as access to manholes, quantity of debris, size of sewer, depth of flow, etc. 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. The Contractor shall be responsible for the legal disposal of all debris removed from the sewers during the cleaning operation including any costs incurred. The Contractor shall not expect the Owner to provide a dump site.

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.

C. TELEVISION INSPECTION

The contractor will submit closed circuit television camera inspection (CCTV) digital files and reports to the City Engineer on an external hard drive for review and approval. The external hard drive will become the property of the City of Waltham Engineering Department. The Contractor shall maintain printed television inspection logs of sewer segments under this contract.

The log sheet(s) at a minimum shall clearly identify:

1. Project Name
2. Street Location, Name, Intersection, Station
3. Date of inspection
4. Total Length of Line Inspected
5. Line Size(s)/Joint Spacing/Type
6. Line and Manhole(s) Condition
7. Significant observations such as service connections, offset joints, drop joints, broken/cracked pipe, protruding services, roots, collapsed sections, infiltration, presence of scale and corrosion and other discernible features.

All logs shall be provided to the Engineer in PDF format (one log per PDF file) at the completion of the project. All television inspection shall be recorded in MPEG2 format (minimum) in accordance with NASCCO specifications and shall include a PACP exchange database that holds all inspection results including pictures and video. Inspections shall be recorded one at a time with each segment recorded as a separate file on the external hard drive.

The contractor shall provide two (2) original and labeled copies of each external hard drive to the Engineer. Stationing shall be recorded at a minimum of every foot and at all points of interest, to allow instant access to any given footage.

D. MEASUREMENT AND PAYMENT

Payment for work under Item 27 shall be by the linear foot for each complete segment as specified in the contract documents or directed by the Engineer. No payment will be given for incomplete segments unless authorized by the Engineer.

<u>ITEM 28</u>	<u>HEAVY SEWER LINE CLEANING</u>	<u>FOOT</u>
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The work to be done under this Item shall conform to the relevant provisions of Sections 201, 230 and the following:

Work Included: Provide all equipment necessary for the proper cleaning of the sewers prior to lining and/or closed circuit television inspection.

DEFINITIONS

Light cleaning (per NASSCO) - Removal of settled deposits: 25% for pipes up to 12-inches in diameter, and 15% for pipes between 13-inches and 24-inches.

Heavy cleaning (per NASSCO) - Removal of obstructions and settled deposits that exceed percentage established for light cleaning. This also includes attached grease deposits if able to remove with rotating nozzle or other mechanical means; not to include saws or cutters. Compliance with this section requires substantial effort towards cleaning.

MATERIALS

High Velocity Hydro-Cleaning Equipment shall, have a minimum of 400 feet of high pressure hose. Have multiple high velocity nozzles, as follows; Standard 35-degree nozzle with multiple rear jets and one front jet. Sand nozzle capable of transporting sand and gravel to the downstream manhole; and rotating nozzle for removal of grease and scale. Include a high velocity gun for washing and scouring manhole walls and floor. Be capable of producing flows from a fine spray to a long distance solid stream. Include a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel. Have equipment operating controls located above ground.

PERFORMANCE

Select cleaning equipment based on the conditions of the lines at the time the work commences.

Light cleaning (small amounts of debris exist within the sewer line): Use high pressure water jetting equipment, brushes and swabs. The Contractor shall clean the sewer and associated manholes, including drop connections and benches, to remove all settled deposits, so that the sewer is ready for televising. This will require an unlimited amount

of passes of a hydraulic flusher to remove all loose debris and collect it for removal in the downstream manhole. All debris must 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.

Heavy cleaning (large deposits of debris or heavy root growth exist within the sewer line): Use high pressure water jetting equipment specifically designed for the intended use. The Contractor shall remove all obstructions in the sewer. This work will include an unlimited number of passes by high velocity hydro-cleaning equipment. All debris must 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, sticks, etc. that will reduce the hydraulic capacity of the sewer and limit future maintenance access of remote equipment.

Use selected equipment to remove all dirt, grease, rock and other deleterious materials and obstructions.

Protect existing pipes from damage caused by improper use of cleaning equipment. The Contractor shall be responsible for any damage to the sewer or any service connections at no additional cost to the Owner.

Take precautions to avoid damage or flooding to public or private property being served by the line being cleaned.

REMOVAL OF MATERIALS

Remove all solids and semi-solids at the downstream manhole of the section being cleaned.

Passing material from one section of a line to another will not be permitted.

DISPOSAL OF MATERIALS

Remove from the site and dispose of all solids or other waste materials recovered during the cleaning operations in an approved manner. The City of Waltham will not be providing location for debris disposal.

FIELD QUALITY CONTROL

Acceptance of this portion of the work may be made upon completion of subsequent television inspection and shall be to the complete satisfaction of the Engineer.

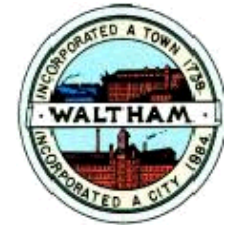
Light Cleaning of Sewer Mains shall be measured in actual linear feet of sanitary sewer main satisfactorily, meeting NASSCO definition of light cleaning, with a cleaning nozzle as measured along the length of the centerline of sewer, which cleaning was performed, between manholes, measured to the nearest foot from inside wall of the manhole to the

inside wall of the other manhole and not including the manhole chamber, in accordance with the Contract Documents. Payment under Item 27, will be made at the contract unit price bid per linear feet and shall include all labor, materials, and equipment necessary to satisfactorily clean a sewer main to an acceptable condition for CCTV inspection and ready for any and all repairs of the main with a cleaning nozzle including water, hoses, and nozzles, vactor, bypass pumping and blocking of flow as required, protection of property, restoration and clean-up, production of inspection report including digital copies, and all other incidentals required to complete the work.

Heavy Cleaning of Sanitary Sewer Mains shall be measured in actual linear feet of sanitary sewer main satisfactorily, meeting NASSCO definition of heavy cleaning, with a cleaning nozzle and/or removing roots from the interior of the main and de-scaling the main. Measurement shall be along the length of the centerline of sewer, which cleaning was performed, between manholes, measured to the nearest foot from inside wall of the manhole to the inside wall of the other manhole and not including the manhole chamber, in accordance with the Contract Documents. Payment under Item 28, will be made at the contract unit price bid per linear feet and shall include all labor, materials, and equipment necessary to satisfactorily clean a sanitary sewer main to an acceptable condition for CCTV inspection and ready for any and all repairs with a cleaning nozzle and/or removing roots from the interior of the main and de-scaling the main including water, hoses, and nozzles, mechanical methods of root removal, all herbicides or chemical treatment, vactor, bypass pumping and blocking of flow as required, protection of property, restoration and clean-up, production of inspection report including digital copies, and all other incidentals required to complete the work.



CITY OF WALTHAM



ENGINEERING DEPARTMENT

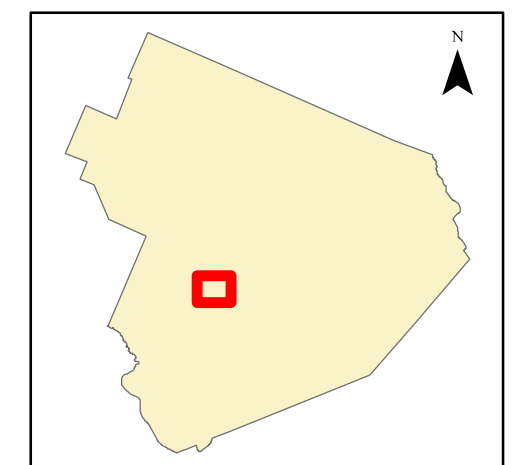
ATTACHMENT E

PROPOSED SMOKE TESTING AREA

JENNINGS ROAD SEWER REPLACEMENT & DRAIN REHABILITATION

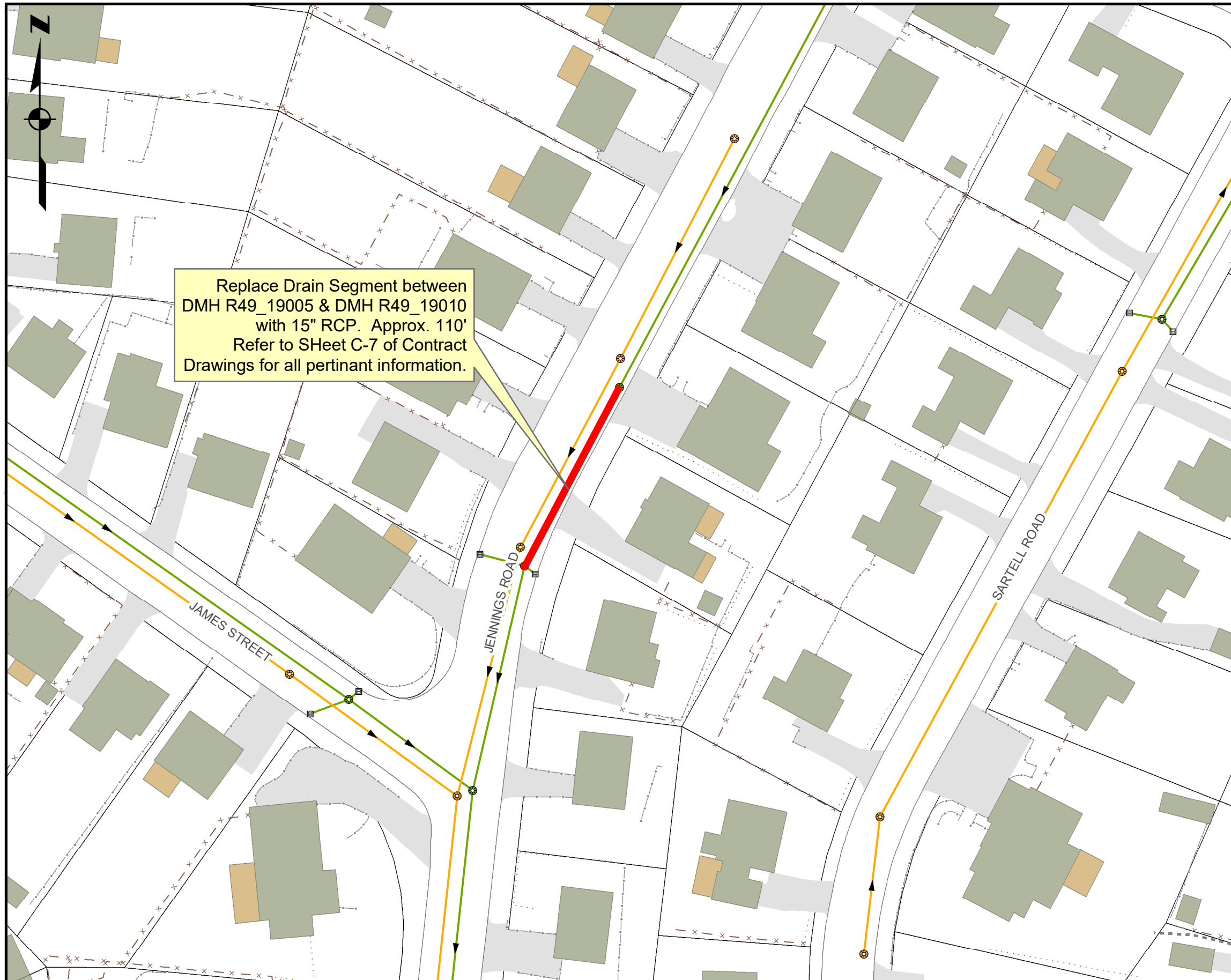
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August 2021



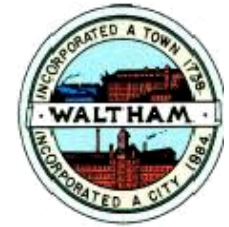
ATTACHMENT F

Additional Drain Segment Replacement



Replace Drain Segment between
DMH R49_19005 & DMH R49_19010
with 15" RCP. Approx. 110'
Refer to SSheet C-7 of Contract
Drawings for all pertinent information.

CITY
OF WALTHAM



ENGINEERING
DEPARTMENT

ATTACHMENT F

ADDITIONAL
DRAIN SEGMENT
REPLACEMENT

JENNINGS ROAD
SEWER REPLACEMENT &
DRAIN REHABILITATION

Scale: 1" = 50
September 2021

