

THE CITY OF WALTHAM
MASSACHUSETTS

PURCHASING DEPARTMENT

**Storm Drain Improvements Project
Weston/Vernon Street Area**

ADDENDUM NO. 2

August 25, 2014

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 ENTERED IN APPROPRIATE SPACE PROVIDED IN THE FORM FOR GENERAL BID – **SECTION 00301-2**

ITEM 1: ANSWERS TO POST MEETING QUESTIONS.

Q1. The preliminary drawings do not include the existing drain invert and rim elevations.

A1. Please see the design drawings included with this Addendum.

ITEM 2: CHANGES

1. ADD the following to the Project Scope on Page 22 of 159:

- Replace existing CB lateral at #102 Weston Street to DMH on Weston street/Fiske Avenue.
- Replace existing 15-inch main drain from DMH on Weston Street at Cabot Street to DMH in the sidewalk just west of #112 Vernon Street and replace with 24-inch PVC SDR 35 pipe.

ADDENDUM NUMBER 2 (CONT.)

- The Contractor shall install identification tape 18-inches below finished grade in trench for installation of all PVC pipe sections that shall state "PVC Drain Pipe Installed Below".
2. **DELETE Section 00301 Bid Form** (pages 35 through 42 of 159) in its entirety and **REPLACE** with the revised section that is attached and part of this Addendum.
 3. **DELETE** preliminary drawings on pages 45 and 46 of 159 in its entirety and **REPLACE** with the revised drawing sheets:
 - G-001 Title Sheet and Index of Drawings
 - G-002 Legend and General Notes
 - C-100 Existing Conditions Plan
 - C-101 Plan and Profile
 - C-102 Plan and Profile
 - C-103 CB and DMH Schedule
 4. **DELETE Section 01024 Measurement and Payment** (pages 48 through 53 of 159) in its entirety and **REPLACE** with the revised section that is attached and part of this Addendum.
 5. **ADD Section 02622 Polyvinyl Chloride Gravity Pipe** that is attached and part of this Addendum.
 6. **ADD Construction Detail 141.000B Trench Pavement Details** that is attached and part of this Addendum.

ITEM 3: CLARIFICATIONS

1. All proposed main drain pipes shall be PVC SDR 35 pipe unless otherwise noted on the drawings or as directed by the Engineer.
2. All proposed catch basin laterals shall be ductile iron pipe unless otherwise

noted on the drawings or as directed by the Engineer.

- 3.** The Contractor shall plug the existing 15" pipe opening connection to the 39-inch x 42-inch concrete Masters Brook Culvert (MBC). This work will be considered incidental to the installation of the proposed 24-inch main drain and no additional compensation will be made.
- 4.** The Contractor shall core the existing 39-inch x 42-inch concrete Masters Brook Culvert (MBC) to connect the proposed 24-inch PVC drain. This work will be considered incidental to the installation of the proposed 24-inch main drain and no additional compensation will be made.
- 5.** The quantities of the Pavement Striping required for the project are listed under Bid Form Section 00301. The Contractor must coordinate with the City of Waltham Traffic Engineering Department for Pavement Striping Plans required. No separate payment will be made.

End of Addendum 2

SECTION 00301

BID FORM

To the City of Waltham, Massachusetts, acting through its Mayor:

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;
- 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 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 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 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;
- and agrees that, if this is accepted will contract with the Owner, as provided the copy of the Contract Documents deposited in the office of the Engineer, this BID form being part of said Documents, that the will perform all work and all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies all other required by Contract Documents the manner within the therein prescribed according to the requirements 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 following schedule:

BID FORM
00301-1

Bidders must bid on each item of the Base Bid. 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 product 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.

Receipt of Addenda numbered _____ to _____ , inclusive, is acknowledged.

(Bidder) _____

(by) _____

(Title) _____

BASE BID

Storm Drain Improvements Project - Weston Street/Vernon Street Area

Refer to Section 01024 - Measurement and Payment for Item Descriptions. The work of the General Bidder, being all work covered by items 1 through 10, inclusive.

Item No.	Item Description Unit Price in Words	Units	Estimated Quantity	Unit Price (In Figures)	Extended Amount (In Figures)
1	Mobilization and Demobilization _____ Dollars and Cents	LS	1		
2	Traffic Management _____ Dollars and Cents	LS	1		
3	Test Pits _____ Dollars and Cents	CY	75		
4	Storm Drain Piping (15" PVC), & Appurtenances _____ Dollars and Cents	lf	350		
4A	Storm Drain Piping (24" PVC), & Appurtenances _____ Dollars and Cents	lf	320		
5	Catch Basin Lateral Piping (12" DI) _____ Dollars and Cents	lf	325		
6	Catch Basin with Double Frame and Grate _____ Dollars and Cents	ea.	1		
7	Catch Basin Hoods _____ Dollars and Cents	ea.	9		
8	Special Precast Concrete Manhole _____ Dollars and Cents	ea.	1		
8A	5-foot Diameter Precast Concrete Manhole _____ Dollars and Cents	ea.	1		
9	Temporary Pavement Restoration (MassDOT) _____ Dollars and Cents	TON	120		
10	Permanent Pavement Restoration (MassDOT) _____ Dollars and Cents	TON	300		
11	Reflectorized White Thermoplastic Pavement Arrows and Legends (MassDOT 860.040) _____ Dollars and Cents	SF	100		
11A	Reflectorized White Thermoplastic Crosswalks and Stop Lines (MassDOT 865.100) _____ Dollars and Cents	SF	900		

BID FORM
00301-3

11B	4 Inch Reflectorized White Line Thermoplastic (MassDOT 866.040)				
	_____ Dollars and _____ Cents	LF	80		
12	4 Inch Reflectorized Yellow Line Thermoplastic (MassDOT 867.040)				
	_____ Dollars and _____ Cents	LF	400		
13	Watermain Relay Allowance				
	_____ Dollars and _____ Cents	ea.	2		
14	Sewer Service Lateral Relay Allowance				
	_____ Dollars and _____ Cents	ea.	4		
15	Concrete Sidewalk/Handicap Ramp				
	_____ Dollars and _____ Cents	SY	100		
16	Remove and Reset Granite Curb				
	_____ Dollars and _____ Cents	LF	175		
17	Police Detail Allowance				
	_____ Dollars and _____ Cents	hr	200	\$50/hr	\$10,000
18	Miscellaneous Work and Cleanup				
	_____ Dollars and _____ Cents	LS	1		

TOTAL FOR BASE BID

Total Amount of Base Bid (**Basis of Award**) (Items 1 through 10 inclusive).

\$ _____
(Amount in figures)

(Amount in words)

The bidder understands that the Owner reserves the right to reject any and all bids and to waive any informality in the bidding.

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.

The bid security accompanying this BID shall be in the amount of 5 percent of the BID payable to the City of Waltham.

The time for completion of this contract is 150 calendar days. Liquidated damages specified in this contract are \$1,000 per day for each calendar day beyond the contract completion date that work remains uncompleted.

Bids shall be valid for ninety (90) days and cannot be withdrawn until after the 90-day period has expired.

BID FORM
00301-4

The undersigned agrees that if the Owner accepts 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, Saturdays, Sundays, and legal holidays excluded, after notification that the AGREEMENT and other Contract Documents are ready for signature.

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 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.

The undersigned bidder hereby certifies he/she will comply with the minority workforce percentage ratio and specific affirmative action steps contained in the EEO/AA provisions of this Contract, including compliance with the Minority/Woman Business Enterprise as required under these contract provisions. The Contractor receiving the award of the contract shall be required to obtain from each of its subcontractors a copy of the certification by said subcontractor, regardless of tier, that it will comply with the minority workforce ratio and specific affirmative action steps contained in these contract provisions and submit it to the contracting agency prior to the award of such subcontract.

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 M.G.L. Ch. 62C, sec. 49A, I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes required under law.

The attached Minority Business Participation and Women Business Participation Form (Form EEO-BMF-190) and the attached Minority Business Participation and the Women Business Participation Letters of Intent (Form EEO-BMF-191) must be completed and submitted as part of the Bid Proposal.

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 MOL 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 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 CERTIFICATE OF NON-COLLUSION must be signed and submitted as part of the Bid Proposal.

BID FORM
00301-5

(Name of General Bidder)

By _____
(Signature and title of authorized representative)

Date _____

SEAL

(Telephone)

(Business address)

(Fax Number)

(City, State, Zip)

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)
- Contractor's Certification (Attached to Section 00301)
- MBE/WBE Participation and Vendor Information Forms (Attached to Section 00301)
 1. Schedule of Participation for SRF Construction (EEO-DEP-190C)
 2. Letter of intent for SRF Construction (EEO-DEP-191C)
 3. Vendor Information Form- SRF Construction (EEO-DEP-VIF-C)
- Completed Certificate of Non-Collusion (Section 00480)
- Completed Certificate of Corporate Vote (Corporation Only) (Section 00481)
- Completed Certificate as to Payment of State Taxes (Section 00482)
- Completed State "Debarment Disclosure Form for Public Contracts" (Section 00484)

BID FORM
00301-6

The Bidder is requested to list four or more of your firm's recent projects of a similar character as required for 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: _____

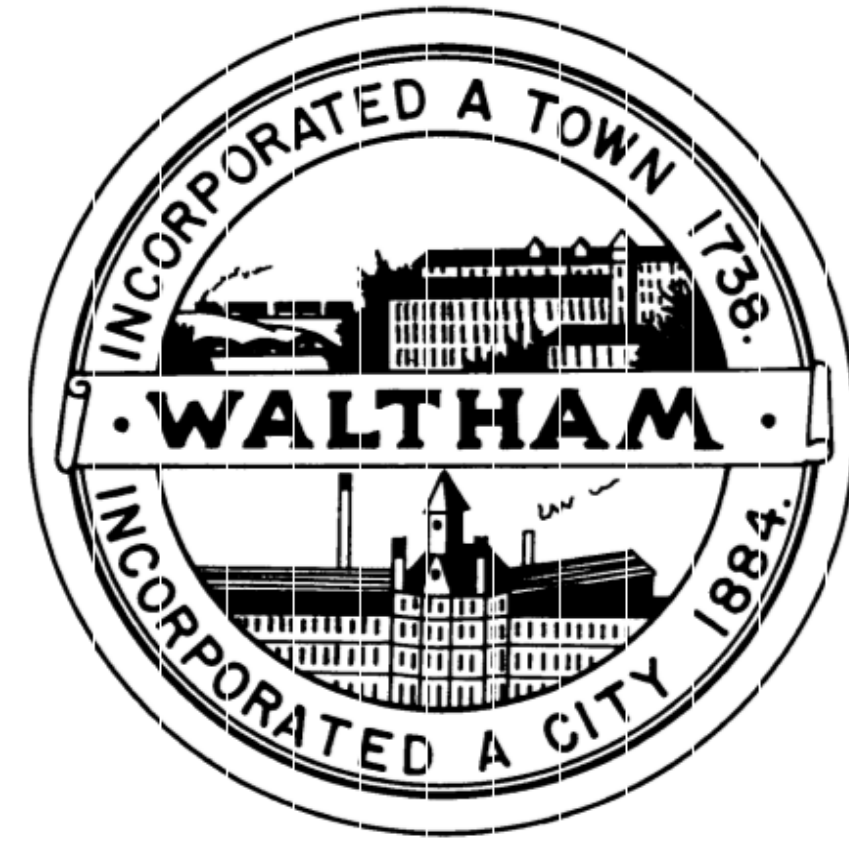
Project Name: _____
Project Location: _____
Contract Amount: \$ _____ Completion Date _____
Owner: _____
Contact Name: _____ Telephone: _____
Architect/Engineer: _____
Contact Name: _____ Telephone: _____

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

Add supplementary page if necessary.

END OF SECTION 00301

CITY OF WALTHAM, MASSACHUSETTS

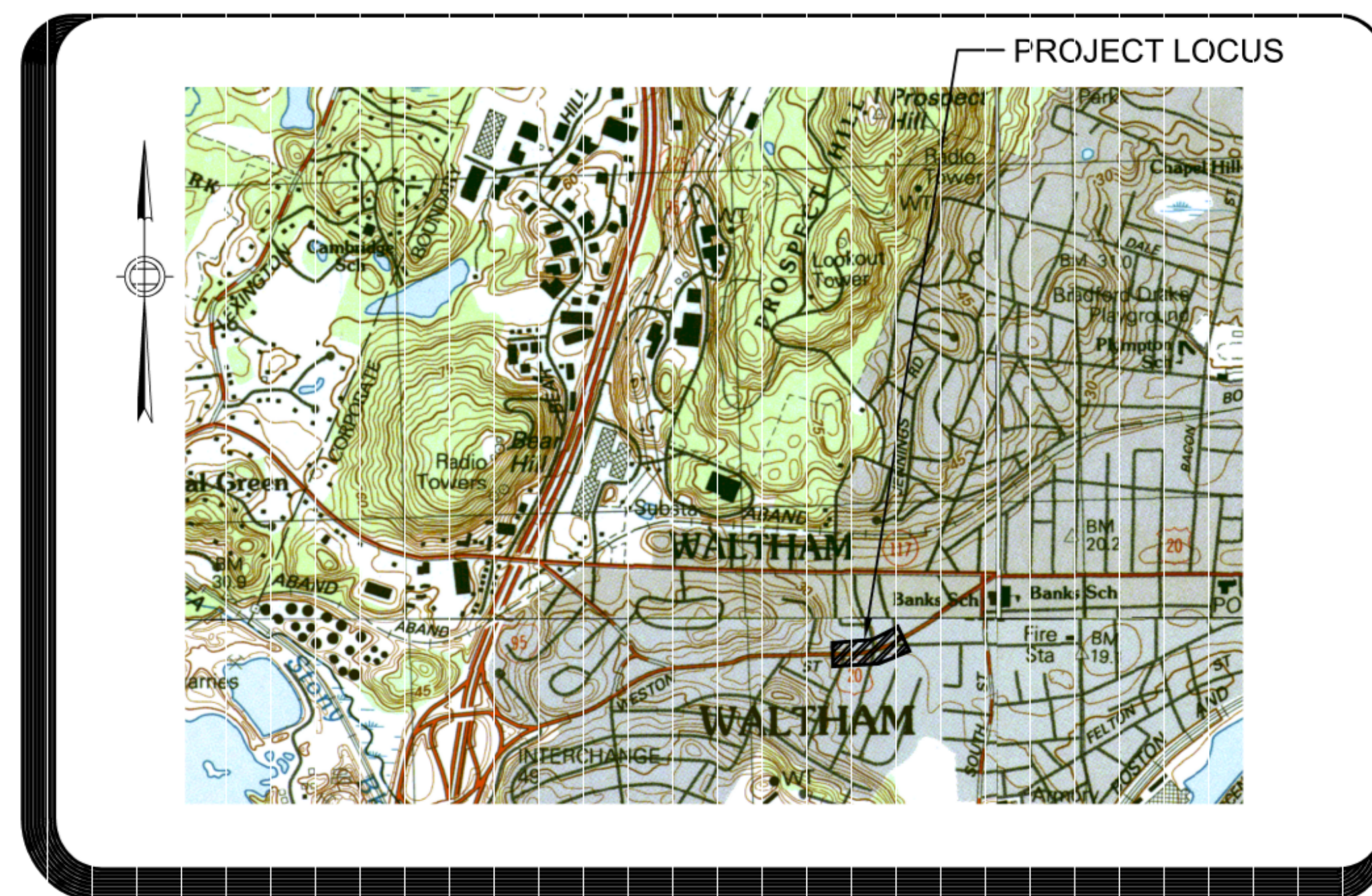


STORM DRAIN IMPROVEMENTS PROJECT WESTON / VERNON STREET WALTHAM, MASSACHUSETTS

AUGUST 25, 2014

INDEX OF DRAWINGS

- G-001 TITLE SHEET AND INDEX OF DRAWINGS
- G-002 LEGEND AND GENERAL NOTES
- C-100 EXISTING CONDITIONS PLAN
- C-101 PLAN AND PROFILE
- C-102 PLAN AND PROFILE
- C-103 CB AND DMH SCHEDULE



SSV ENGINEERING INC.
609 WINTER STREET
FRAMINGHAM, MA

GENERAL NOTES

- EXISTING CONDITIONS BASEPLAN SHOWN HEREIN ARE THE RESULT OF AN ON THE GROUND SURVEY PERFORMED IN AUGUST 2014.
- THE HORIZONTAL REFERENCE DATUM IS THE NAD 83. ELEVATIONS ARE REFERENCED TO THE NGVD 29 VERTICAL DATUM.
- ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION IS NOT GUARANTEED.
- THE UTILITY INFORMATION SHOWN IS COMPILED BASED ON FIELD SURVEY INFORMATION AND RECORD INFORMATION. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM RECORD PLANS AND ARE APPROXIMATE ONLY. LOCATIONS OF UNDERGROUND STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT/COMPANY SHOULD BE CONSULTED AND THE ACTUAL LOCATIONS OF SUBSURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. SEVENTY-TWO HOURS PRIOR TO EXCAVATION, BLASTING, GRADING, AND/OR PAVING, CONTACT THE DIG SAFE CALL CENTER AT 1-888-344-7233.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND PAYMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, SEWER, WATER AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- EXISTING SITE FEATURES AND SUBSURFACE UTILITIES WITHIN THE LIMITS OF WORK SHALL BE REMOVED AS REQUIRED TO PERFORM PROPOSED WORK EXCEPT WHERE OTHERWISE NOTED. AREAS WITHIN THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION.
- EXISTING GRAVEL BORROW DETERMINED TO BE SUITABLE SHALL REMAIN, AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITY SERVICES AND ROADWAY LIGHTING THROUGHOUT CONSTRUCTION, EXCEPT NOTED OTHERWISE.
- ALL WORK SHALL BE IN ACCORDANCE WITH REGULATIONS FOR ACTIVITIES INVOLVING WETLANDS, WATERCOURSES AND/OR EROSION CONTROLS, AND AS DIRECTED BY THE ENGINEER. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, MARCH 1997 AND THE U.S.D.A. SCS'S EROSION AND SEDIMENT CONTROL IN SITE DEVELOPMENT, MASSACHUSETTS CONSERVATION GUIDE, SEPTEMBER 1983.
- TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF WORK..
- CONTRACTOR SHALL REMOVE ALL SEDIMENTATION CONTROL SYSTEMS, REMOVE ALL ACCUMULATED SEDIMENTS, AND SEED THE DISTURBED AREAS, WHEN THE CONTROL SYSTEMS ARE NO LONGER REQUIRED. CONTRACTOR WILL REQUEST AND RECEIVE PERMISSION FROM THE ENGINEER PRIOR TO REMOVING ANY CONTROL SYSTEM.
- CONTRACTOR SHALL COORDINATE THE FULL ROADWAY CLOSURE AND MAINTENANCE OF TRAFFIC WITH THE ENGINEER. NO WORK SHALL OCCUR UNTIL ALL TRAFFIC CONTROL DEVICES FOR FULL ROADWAY CLOSURE AND DETOUR ARE IN PLACE.
- WESTON STREET (STATE ROUTE 20) IS A STATE HIGHWAY. ALL WORK SHALL CONFORM TO THE MASSDOT SPECIFICATIONS AND REQUIREMENTS.
- THE CONTRACTOR SHALL MAINTAIN AT LEAST TWO LANES OF TRAFFIC (ONE IN EACH DIRECTION) AT ALL TIMES.
- TRAFFIC MANAGEMENT PLAN SHALL BE PREPARED AND SUBMITTED FOR REVIEW AT LEAST ONE WEEK PRIOR TO THE COMMENCEMENT OF ANY WORK.
- ALL WORK WILL BE SUBJECT TO RESTRICTED WORK HOURS. CONTRACTOR MAY PROPOSE NIGHT/WEEKEND WORK.
- THE TEST PITS SHOWN ON THE DRAWING MUST BE COMPLETED PRIOR TO COMMENCEMENT OF WORK.
- THE CONTRACTOR SHALL COORDINATE WITH ALL PRIVATE UTILITY

COMPANIES AND SUBMIT A PLAN FOR REVIEW ONE WEEK PRIOR TO COMMENCEMENT OF WORK.

- THE CONTRACTOR SHALL DISCUSS UTILITY, TRAFFIC, EMERGENCY AND SAFETY ISSUES AND COORDINATION WITH THE CITY OFFICIALS AT THE PRE-CONSTRUCTION MEETING.
- PUBLIC NOTICE SHALL BE PROVIDED TO ALL ABUTTERS AT LEAST ONE WEEK PRIOR TO ANY WORK.
- TWO ELECTRONIC TRAFFIC MESSAGE BOARDS MUST BE INSTALLED FOR 8 WEEKS.
- INSTALL NEW CB HOODS WHEN REPLACING CB LATERAL PIPING.
- ALL PVC PIPES SHALL BE SDR-35.
- INSTALL IDENTIFICATION TAPE 18 INCHES BELOW FINISHED GRADE ALONG ALL PVC STORM DRAIN PIPE.
- REMOVE AND DISPOSE OFF EXISTING HOODS AND INSTALL NEW HOODS FOR CATCH BASINS WITH PROPOSED LATERALS.

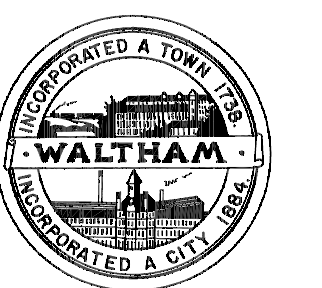
SYMBOLS

EXISTING	PROPOSED	
□ CB	□ CB	CATCH BASIN (GUTTER INLET)
=====	=====	CURB (OR BERM)-TYPE NOTED
-----	-----	EDGE OF ROAD
○ EHH	● EHH	ELECTRIC HANDHOLE
○ EMH	● EMH	ELECTRIC MANHOLE
○ TMH	● TMH	TELEPHONE MANHOLE
○ WMH	● WMH	WATER MANHOLE
○ SMH	● SMH	SEWER MANHOLE
○ DMH	⊙ DMH	DRAINAGE MANHOLE
○ GG	● GG	GAS GATE
○ WG	● WG	WATER GATE AND GATE BOX
○ CS	● CS	CURB STOP
Hyd	Hyd	HYDRANT
LP	LP	STREET LIGHT
○ UP	●	UTILITY POLE
○ GUY	●	GUY POLE
X" RCP _D	→	DRAIN PIPE
X" VCP _S	— S —	SEWER MAIN
E	— UE —	ELECTRIC DUCT
X" G	— G —	GAS MAIN
X" W	— W —	WATER MAIN



SSV ENGINEERING
609 WINTER STREET,
FRAMINGHAM, MA

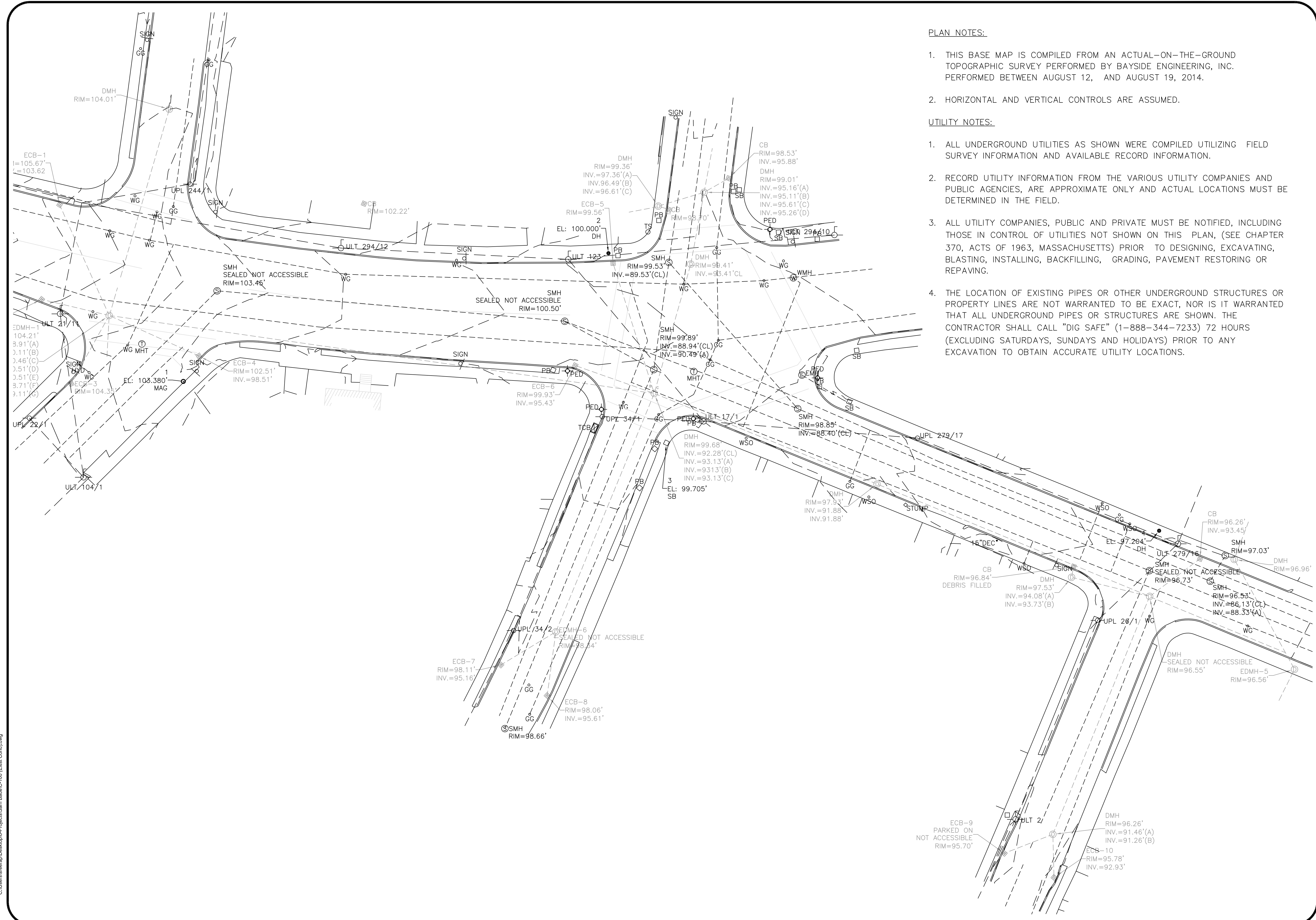
No.	Revision/Issue	Date
1	ADDENDUM #2	08/25/14



ENGINEERING DEPARTMENT
CITY OF WALTHAM
MASSACHUSETTS

STORM DRAIN
IMPROVEMENTS PROJECT
WESTON / VERNON STREET
WALTHAM, MASSACHUSETTS
GENERAL NOTES & LEGENDS

Project	Sheet
Date AUG 2014	G-002
Scale 1" = 20'	



PLAN NOTES:

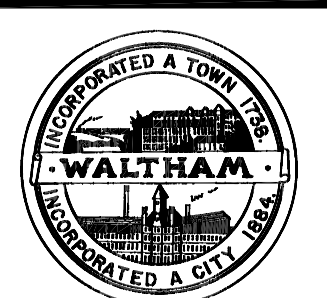
1. THIS BASE MAP IS COMPILED FROM AN ACTUAL-ON-THE-GROUND TOPOGRAPHIC SURVEY PERFORMED BY BAYSIDE ENGINEERING, INC. PERFORMED BETWEEN AUGUST 12, AND AUGUST 19, 2014.

2. HORIZONTAL AND VERTICAL CONTROLS ARE ASSUMED.

UTILITY NOTES:

1. ALL UNDERGROUND UTILITIES AS SHOWN WERE COMPILED UTILIZING FIELD SURVEY INFORMATION AND AVAILABLE RECORD INFORMATION.
2. RECORD UTILITY INFORMATION FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES, ARE APPROXIMATE ONLY AND ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD.
3. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, (SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS) PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
4. THE LOCATION OF EXISTING PIPES OR OTHER UNDERGROUND STRUCTURES OR PROPERTY LINES ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL CALL "DIG SAFE" (1-888-344-7233) 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO ANY EXCAVATION TO OBTAIN ACCURATE UTILITY LOCATIONS.

No.	Revision/Issue	Date
1	ADDENDUM #2	08/25/14

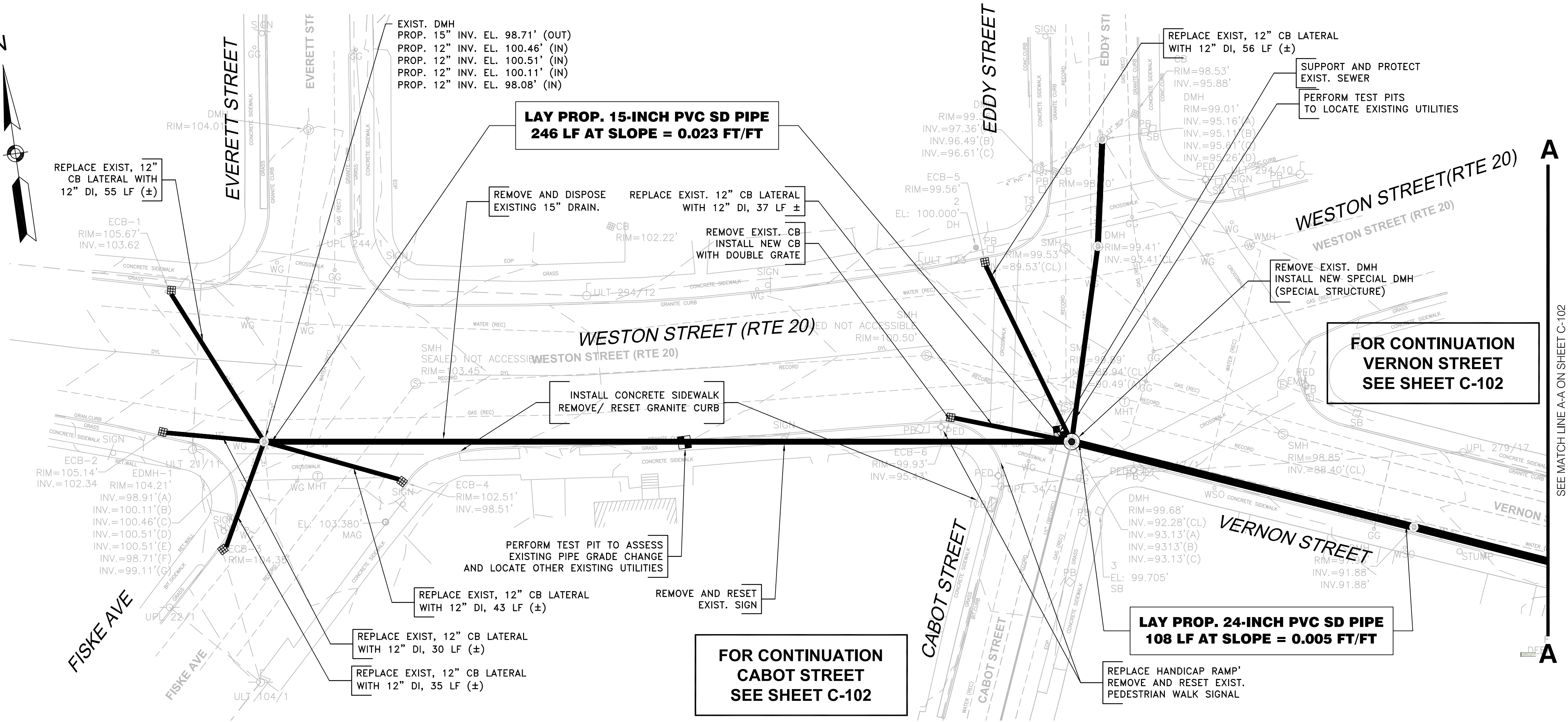
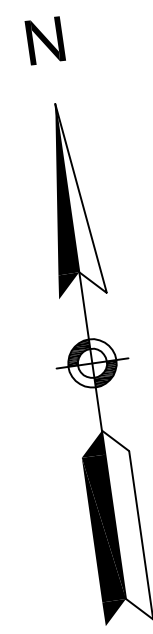


ENGINEERING DEPARTMENT
CITY OF WALTHAM
MASSACHUSETTS

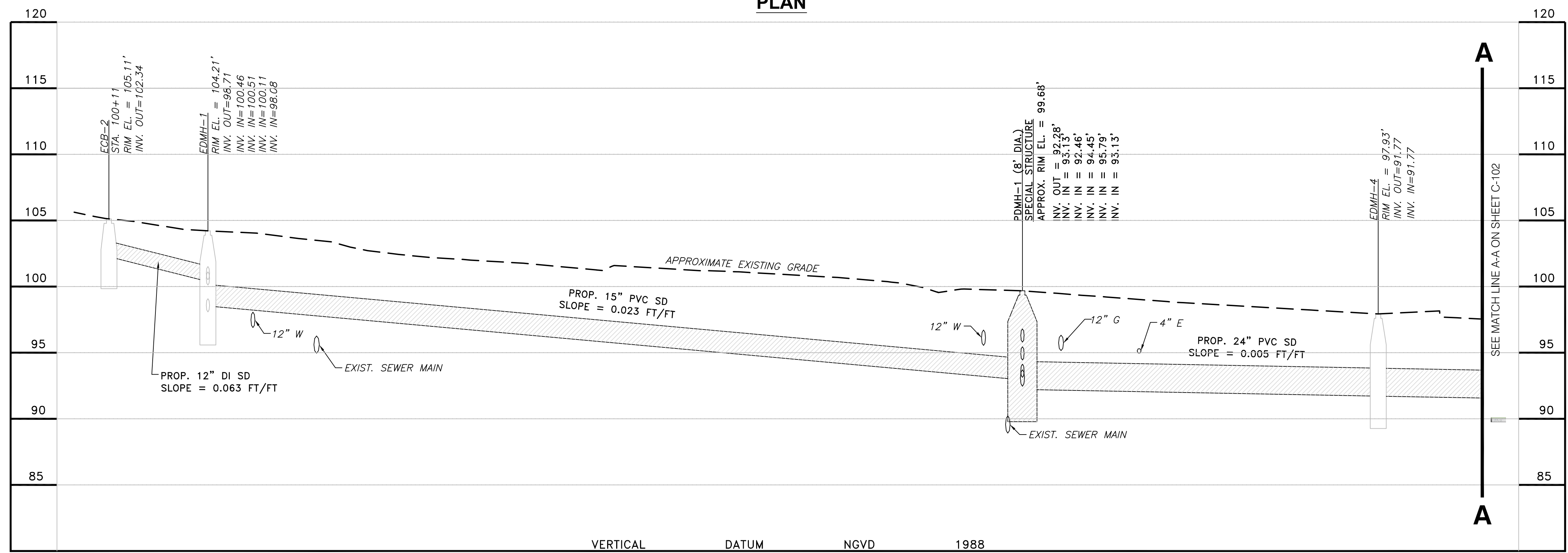
STORM DRAIN
IMPROVEMENTS PROJECT
WESTON / VERNON STREET
WALTHAM, MASSACHUSETTS
EXISTING CONDITIONS

Project	Sheet
Date AUG 2014	C-100
Scale 1" = 20'	

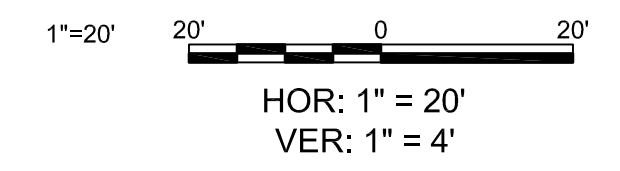
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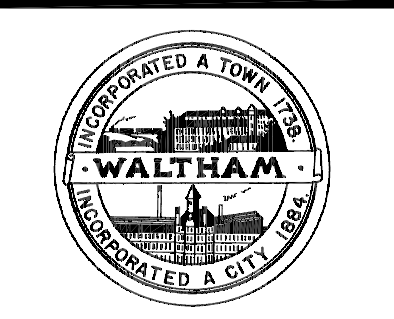
PLAN



PROFILE



No.	Revision/Issue	Date
1	ADDENDUM #2	08/25/14

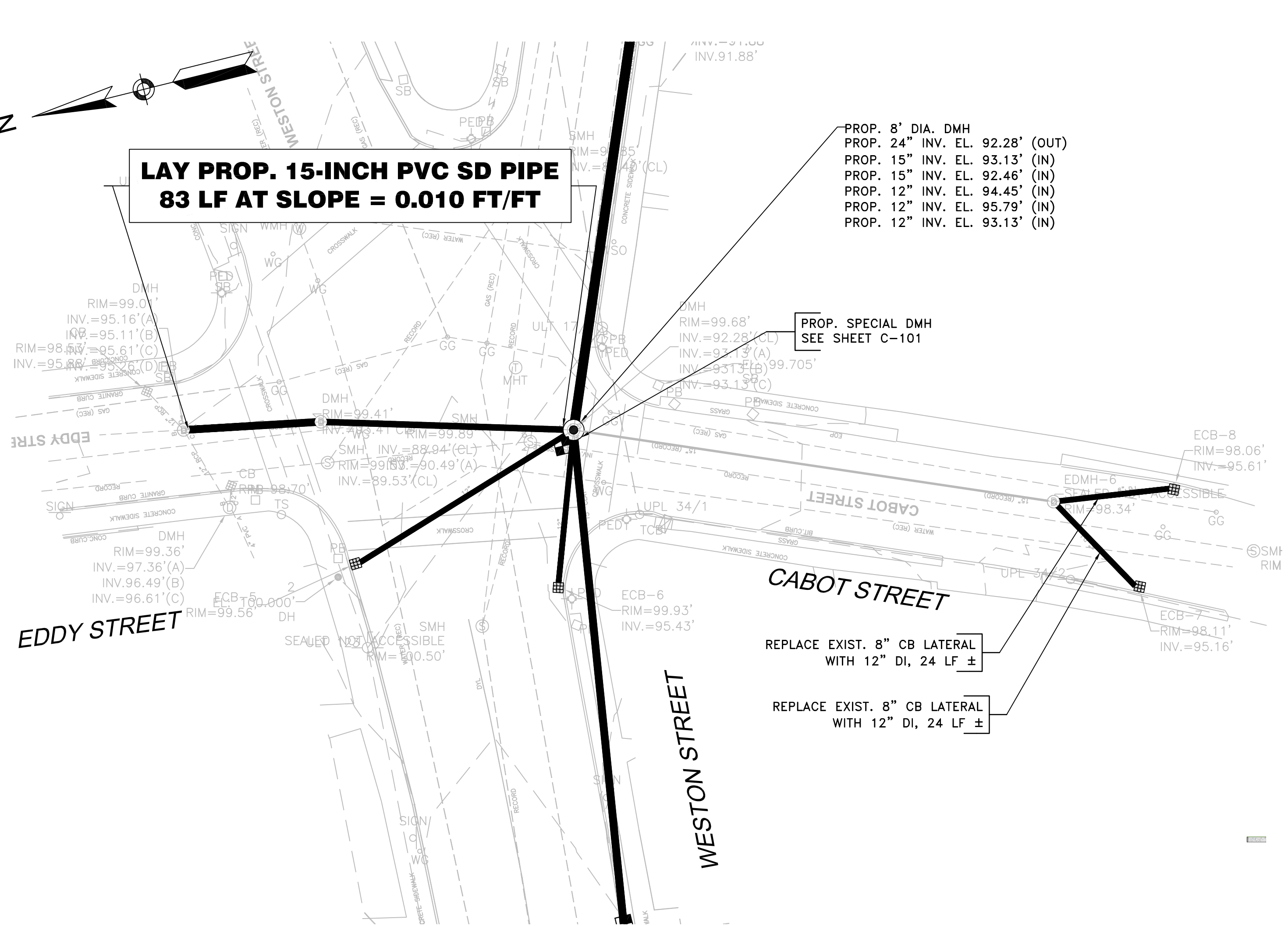
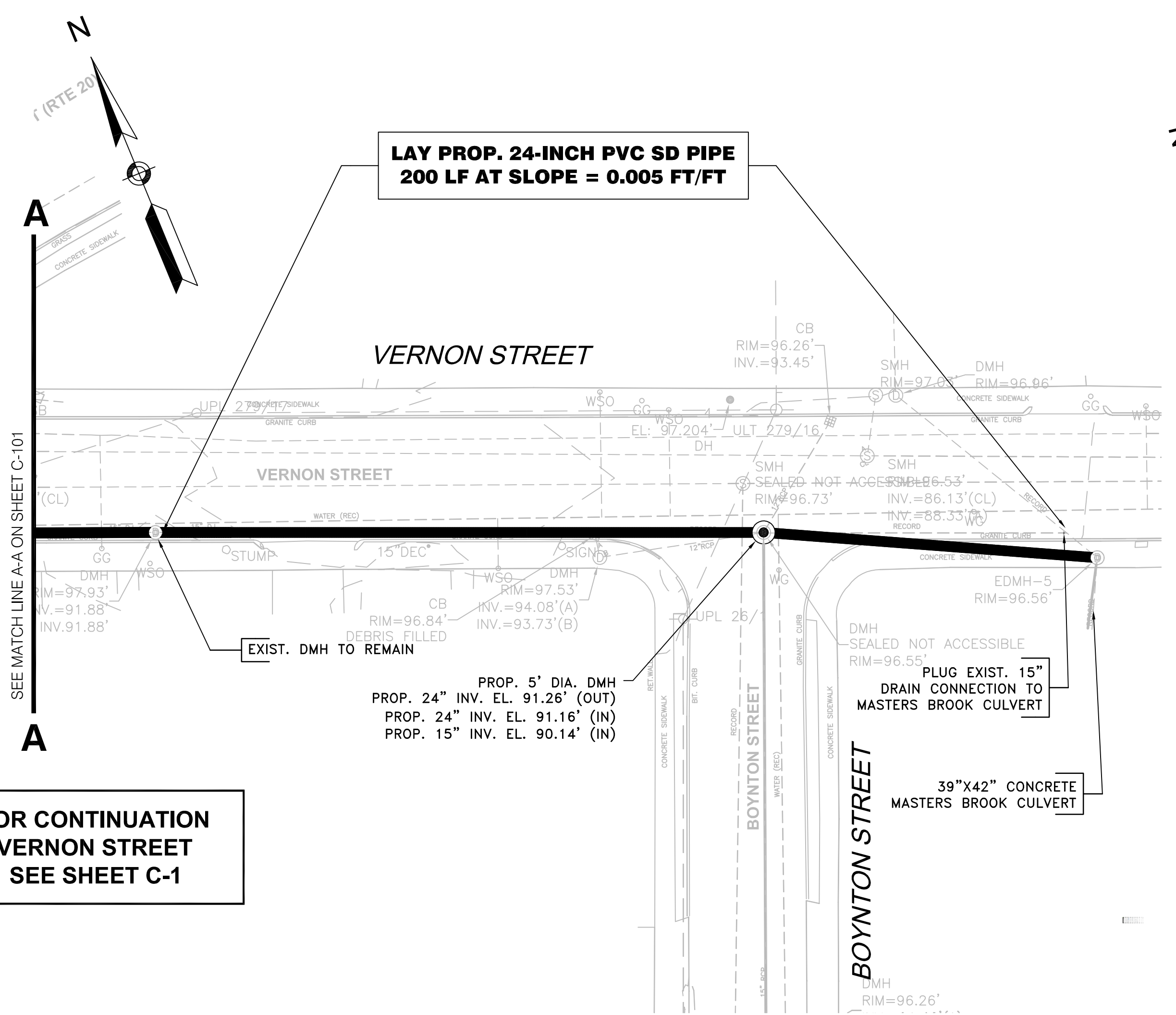


ENGINEERING DEPARTMENT
 CITY OF WALTHAM
 MASSACHUSETTS

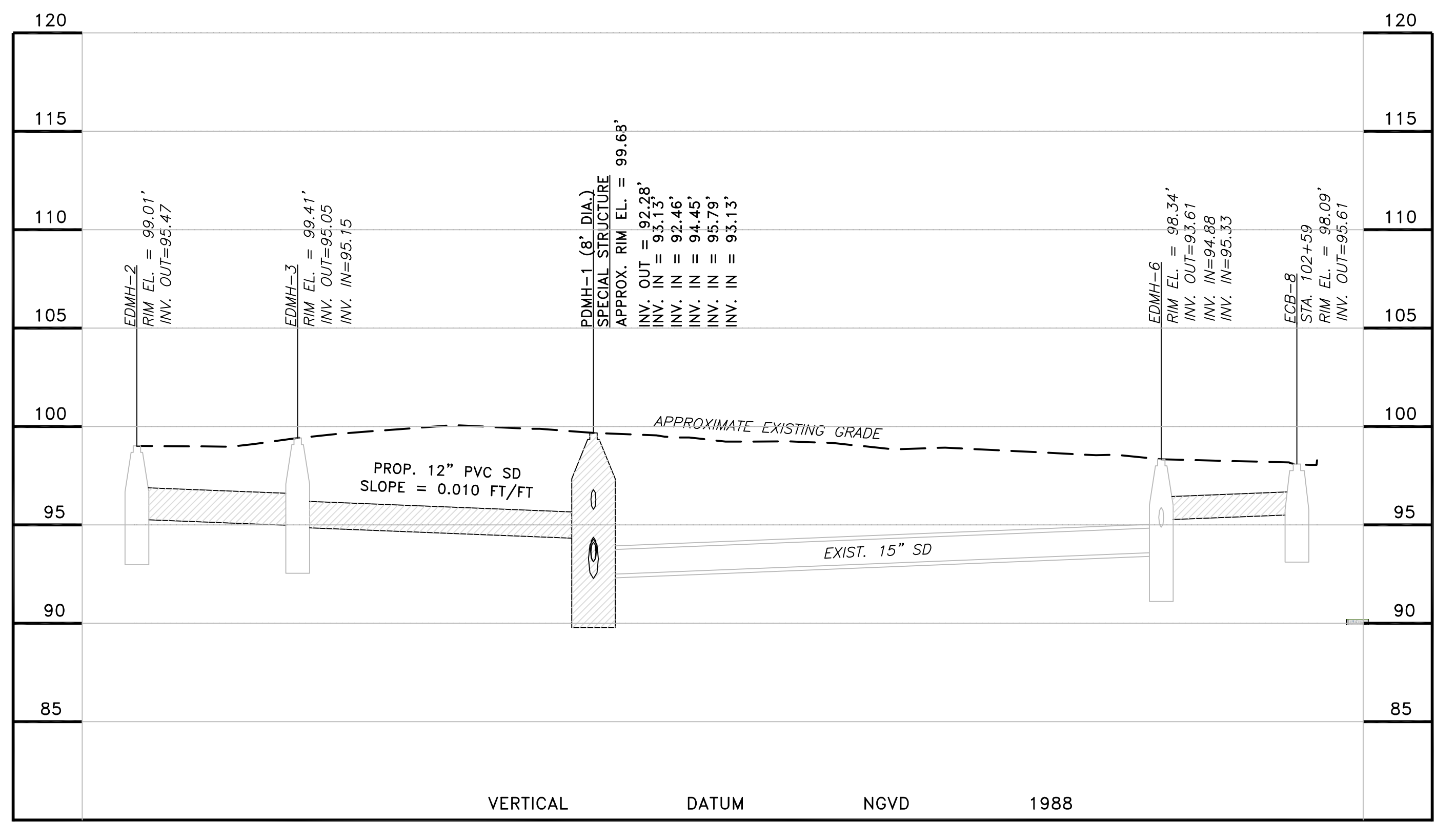
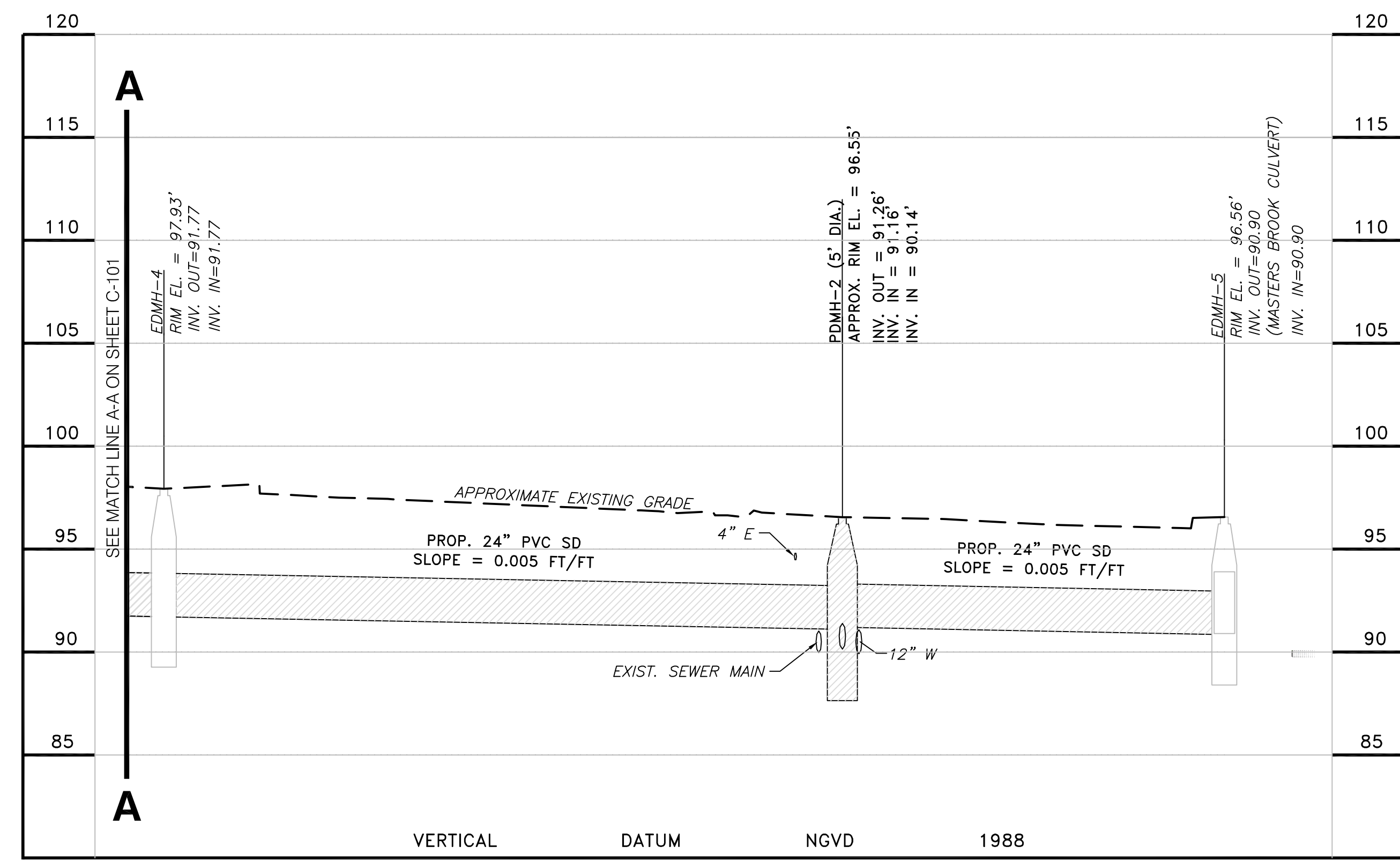
STORM DRAIN
 IMPROVEMENTS PROJECT
 WESTON / VERNON STREET
 WALTHAM, MASSACHUSETTS
 PLAN AND PROFILE

Project	Sheet
Date AUG 2014	C-101
Scale 1" = 20'	

C:\Users\scarp\Desktop\Projects\Sun Barde\C-101-102(Plan & Profile).dwg

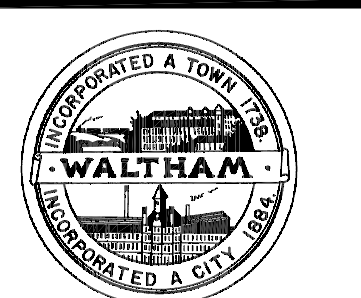


FOR CONTINUATION
VERNON STREET
SEE SHEET C-1



HOR: 1" = 20'
VER: 1" = 4'

No.	Revision/Issue	Date
1	ADDENDUM #2	08/25/14



ENGINEERING DEPARTMENT
CITY OF WALTHAM
MASSACHUSETTS

STORM DRAIN
IMPROVEMENTS PROJECT
WESTON / VERNON STREET
WALTHAM, MASSACHUSETTS
PLAN AND PROFILE

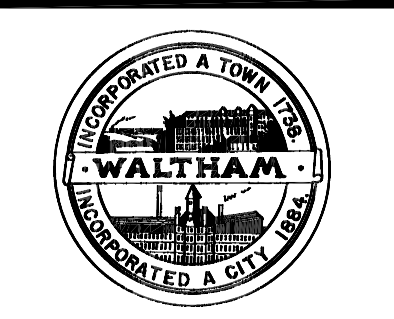
Project	Sheet
Date AUG 2014	C-102
Scale 1" = 20'	

CATCH BASIN SCHEDULE		
STRUCTURE	RIM	INVERT
ECB-1	105.68	INVERT OUT = 103.62 (EDMH-1)
ECB-2	105.11	INVERT OUT = 102.34 (EDMH-1)
ECB-3	104.34	INVERT OUT = 100.45 (EDMH-1)
ECB-4	102.68	INVERT OUT = 98.51 (EDMH-1)
ECB-5	99.62	INVERT OUT = 93.73 (PDMH-1 (8' DIA.))
ECB-6	99.93	INVERT OUT = 95.43 (PDMH-1 (8' DIA.))
ECB-7	98.13	INVERT OUT = 95.16 (EDMH-6)
ECB-8	98.09	INVERT OUT = 95.61 (EDMH-6)
ECB-9	95.76	INVERT OUT = 92.93 (EDMH-7)
ECB-10	95.83	INVERT OUT = 92.93 (EDMH-7)

DRAIN MANHOLE SCHEDULE		
STRUCTURE	RIM	INVERT
EDMH-1	104.21	INVERT IN = 100.46 (ECB-2) INVERT IN = 100.51 (ECB-1) INVERT IN = 100.11 (ECB-3) INVERT IN = 98.08 (ECB-4) INVERT OUT = 98.71 (PDMH-1 (8' DIA.))
EDMH-2	99.01	INVERT OUT = 95.47 (EDMH-3)
EDMH-3	99.41	INVERT IN = 95.15 (EDMH-2) INVERT OUT = 95.05 (PDMH-1 (8' DIA.))
EDMH-4	97.93	INVERT IN = 91.77 (PDMH-1 (8' DIA.)) INVERT OUT = 91.77 (PDMH-2 (5' DIA.))
EDMH-5	96.56	INVERT IN = 90.90 (PDMH-2 (5' DIA.)) INVERT OUT = 90.90 (MASTERS BROOK CULVERT)
EDMH-6	98.34	INVERT IN = 94.88 (ECB-7) INVERT IN = 95.33 (ECB-8) INVERT OUT = 93.61 (PDMH-1 (8' DIA.))
EDMH-7	96.26	INVERT IN = 91.46 (ECB-9) INVERT IN = 91.46 (ECB-10) INVERT OUT = 91.29 (PDMH-2 (5' DIA.))
PDMH-1 (8' DIA.)	99.68	INVERT IN = 93.13 (EDMH-1) INVERT IN = 92.46 (EDMH-6) INVERT IN = 94.45 (EDMH-3) INVERT IN = 95.79 (ECB-6) INVERT IN = 93.13 (ECB-5) INVERT OUT = 92.28 (EDMH-4)
PDMH-2 (5' DIA.)	96.55	INVERT IN = 91.16 (EDMH-4) INVERT IN = 90.14 (EDMH-7) INVERT OUT = 91.26 (EDMH-5)

SSV
ENGINEERING INC.
SSV ENGINEERING
609 WINTER STREET,
FRAMINGHAM, MA

No.	Revision/Issue	Date
1	ADDENDUM #2	08/25/14



ENGINEERING DEPARTMENT
CITY OF WALTHAM
MASSACHUSETTS

STORM DRAIN
IMPROVEMENTS PROJECT
WESTON / VERNON STREET
WALTHAM, MASSACHUSETTS
CB AND DMH SCHEDULE

Project	Sheet
Date AUG 2014	C-103
Scale	

SECTION 01024

MEASUREMENT AND PAYMENT

PART I-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, insurance, 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. The prices for those items which involve excavation shall include compensation for disposal of surplus excavated material, dewatering, earth support, and handling and disposal of water.
- F. The prices for all pipe items shall constitute full compensation for furnishing, laying, jointing, and testing of pipe; excavation and backfill; and clean up.
- G. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price thereof shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation.
- H. Unit prices submitted for various items of work will be utilized for determining prices of any additional work necessary during construction.
- I. Final payment shall not be issued until the Contractor submits record drawings and the Engineer approves these drawings. .

MEASUREMENT AND PAYMENT

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1.2 ITEM DESCRIPTIONS-BASE BID

Item 1: Mobilization and Demobilization

1. For the Lump sum bid price for this Item, the Contractor shall mobilize and demobilize to and from the site all labor, materials, and equipment to complete all work associated with this contract. Demobilization from the site includes, but is not limited to: removal of all equipment and final cleanup to the satisfaction of the City.
2. Payment for the mobilization and demobilization shall be by lump sum. Fifty percent of the lump sum price shall be paid to the Contractor upon completing mobilization activities, and the remaining fifty percent shall be paid upon demobilization from the site.

Item 2: Traffic Management

1. For the Lump sum bid price for this Item, the Contractor shall prepare Traffic Management Plans in conformance with all current and applicable requirements and implement the plan throughout the execution of the project. This will include all the signs, electronic displays, safety devices, labor, materials, and equipment to complete all work associated with this contract.
2. Payment for the mobilization and demobilization shall be by lump sum.

Item 3: Test Pits

1. The Contractor shall conduct test pits as identified on the drawings and as directed by the Engineer to obtain information on the location and elevations of existing utilities.
2. Payment for this item shall be by Cubic Yard of excavation.

Item 4: Storm Drain Piping (15" PVC) and Appurtenances

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment for this item shall be made based on the percentage of work completed as determined by the Engineer.
3. The Contractor shall provide all necessary materials, equipment and labor to furnish and install the storm drain pipe and appurtenances. Work shall include scheduling and coordinating the work, verification of existing pipe sizes, coring, cutting and patching at the connection to the existing system, grouting of openings and corings, protection of private and public property and utilities, excavation, dewatering, backfill and compaction; disposal of any water; and maintenance of flow during construction. Work shall include disposal of excess material and debris; and resetting any disturbed curbs, walkways, driveways, retaining walls, landscaping or any other site features disturbed during construction.
4. Full payment shall not be made until the piping is tested to the satisfaction of the Engineer and the property is restored to its pre-construction condition.

MEASUREMENT AND PAYMENT

5. Payment shall be per unit as listed on the Bid Form.

Item 4A: Storm Drain Piping (24" PVC) and Appurtenances

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment for this item shall be made based on the percentage of work completed as determined by the Engineer.
3. The Contractor shall provide all necessary materials, equipment and labor to furnish and install the storm drain pipe and appurtenances. Work shall include scheduling and coordinating the work, verification of existing pipe sizes, coring, cutting and patching at the connection to the existing system, grouting of openings and corings, protection of private and public property and utilities, excavation, dewatering, backfill and compaction; disposal of any water; and maintenance of flow during construction. Work shall include disposal of excess material and debris; and resetting any disturbed curbs, walkways, driveways, retaining walls, landscaping or any other site features disturbed during construction.
4. Full payment shall not be made until the piping is tested to the satisfaction of the Engineer and the property is restored to its pre-construction condition.
5. Payment shall be per unit as listed on the Bid Form.

Item 5: Catch Basin Lateral Piping (12" DI)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment for this item shall be made based on the percentage of work completed as determined by the Engineer.
3. The Contractor shall provide all necessary materials, equipment and labor to furnish and install the piping. Work shall include scheduling and coordinating the work, verification of existing pipe sizes, coring, cutting and patching at the connection to the existing system, grouting of openings and corings, protection of private and public property and utilities, excavation, dewatering, backfill and compaction; disposal of any water; and maintenance of flow during construction. Work shall include disposal of excess material and debris; and resetting any disturbed curbs, walkways, driveways, retaining walls, landscaping or any other site features disturbed during construction.
4. Full payment shall not be made until the piping is tested to the satisfaction of the Engineer and the property is restored to its pre-construction condition.
5. Payment shall be per unit as listed on the Bid Form.

MEASUREMENT AND PAYMENT

01024-3

Item 6: Catch Basin with Double Frame and Grate

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 7: Catch Basin Hoods

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 8: Special Precast Concrete Drain Manhole

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 8A: 5-Foot Diameter Precast Concrete Drain Manhole

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 9: Temporary Pavement Restoration (MassDOT)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. The quantity of pavement to be paid for under this item shall be the actual amount of square yards after compaction measured in place by the engineer.
3. Payment for this item shall include full compensation for furnishing, placing, compacting and maintaining all paved surfaces.

Item 10: Permanent Pavement Restoration (MassDOT)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. The quantity of pavement to be paid for under this item shall be the actual amount of square yards after compaction measured in place by the engineer.

MEASUREMENT AND PAYMENT

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3. Payment for this item shall include full compensation for furnishing, placing, compacting and maintaining all paved surfaces.

Item 11: Reflectorized White Thermoplastic Pavement Arrows and Legends (MassDOT 860.040)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 11A: Reflectorized White Thermoplastic Crosswalks and Stop Lines (MassDOT 865.100)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 11B: 4 Inch Reflectorized White Line Thermoplastic (MassDOT 866.040)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 12: 4 Inch Reflectorized Yellow Line Thermoplastic (MassDOT 867.040)

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as specified and as shown on the drawings.
2. Payment shall be per unit as listed on the Bid Form.

Item 13: Watermain Relay Allowance

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as necessary as specified and as shown on the drawings.
2. The quantity to be paid for under this item shall be the actual number of watermain relays completed.

Item 14: Sewer Service Lateral Relay Allowance

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as necessary specified and as shown on the drawings.
2. The quantity to be paid for under this item shall be the actual number of sewer service lateral relays completed.

MEASUREMENT AND PAYMENT

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Item 15: Concrete Sidewalk/Handicap Ramp

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as necessary specified and as shown on the drawings.
2. The quantity to be paid for under this item shall be the actual number of sewer service lateral relays completed.

Item 16: Remove and Reset Granite Curb

1. Under the unit bid price for this Item, the Contractor shall provide all necessary materials equipment and labor to execute the work as necessary specified and as shown on the drawings.
2. The quantity to be paid for under this item shall be the actual number of sewer service lateral relays completed.

Item 17: Police Detail Allowance

1. Police officers if necessary shall be authorized by the City and the Engineer and used for traffic management around construction zones.
2. Payment shall be on a unit basis (per hour).

Item 18: Miscellaneous Work and Cleanup

1. Under the lump sum price for this Item, the Contractor shall provide all general construction services, labor, materials, supplies, consumables, and equipment necessary to complete all work required to construct the work identified on the Drawings and in the Specifications, which is not included in all other Bid Items. 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. Submission of construction photographs of completed work at each property
 - b. Submission of all schedules, lists, laboratory test results, materials and sources, and shop drawings, photographs before and after construction, as required, in a timely manner to the Engineer for review and approval.
 - c. Maintenance and repair of all work for one (1) year period.
 - 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 and 29 CFR 1926.
 - e. Implementation of the Health and Safety Plan.
 - f. Construction, maintenance, and removal of equipment from any staging or wash down areas.
 - g. Erosion Control measures to prevent exposed fill, excavated material, or other materials from washing away or otherwise eroding from slopes or into wetlands.

MEASUREMENT AND PAYMENT

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- h. Coordination of all construction activities with the City of Waltham.
 - i. All other project related direct and indirect costs not described above.
- 2. Payment for this lump sum item will be based on a percentage of the work completed, as determined by the Engineer.

END OF SECTION 01024

SECTION 02622

POLYVINYL CHLORIDE GRAVITY PIPE

PART 1 -GENERAL

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes the following:
 - 1. Providing and testing of pipe, pipe fittings and specials, jointing materials, and accessories, of various sizes, classes, joints and types, and appurtenant work, at the locations and to the lines and grades as indicated and/or as directed, complete in place, in accordance with the drawings and specifications.
 - 2. The pipe specified under this section shall include all gravity flow sanitary sewers.
- B. Related sections include the following:
 - 1. Section 02210 - Earth Excavation, Backfill, Fill and Grading
 - 2. Section 02601- Manholes

1.3 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with Section 01300- SUBMITTAL PROCEDURES:
 - 1. Submit shop drawings or descriptive literature, or both showing pipe dimensions, joints, joint gaskets, and other details for each size of pipe to be furnished for the project. All pipe furnished shall be manufactured only in accordance with the specifications and the drawings.

1.4 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 and as specified.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Section 01610. PART 2 - PRODUCTS

POLYVINYL CHLORIDE GRAVITY PIPE

2.1 PIPE FITTINGS AND SPECIALS

- A. The polyvinyl chloride pipe and fittings, including those required for stubs, shall conform to ASTM Standard Specifications for Type PSM PVC Sewer Pipe and Fittings, Designation ASTM D3034, latest revision, for sizes 4"-15" and ASTM F679, latest revision, for sizes 18"-27". The pipe shall have a maximum pipe diameter to wall thickness ratio (SDR) of 35. The pipe shall be tested by the flat plate deflection method at a minimum of 45 psi at 5 percent deflection in accordance with ASTM D 2412. Standard laying lengths shall be either 13 feet or 20 feet.
- B. Specials, if required, shall conform to the Specifications for straight pipe insofar as applicable and to the details indicated on the Drawings or bound into the back of the Specifications.
- C. Insulation shall be manufactured by Thermal Pipe Systems, Braintree, Massachusetts, Atlas Insulation, Ayer, Massachusetts or Insulated Piping Systems Inc., Canton, Massachusetts, or equal. Insulation shall be factory formed-in-place polyurethane foam insulation having nominal thickness of 3", with an in-place density of 2.5 pcf, and a "K" factor of 0.14 BTU/in./hr/deg./F/sq.ft. Straight joints between insulated pipe lengths, and the end section of non-insulated pipe shall be 20-gauge corrugated aluminum performed to be fastened with stainless steel screws and bands. Jackets shall have expansion joints at 25-foot intervals. Sections of jacket shall have 2-inch minimum at all seams.

2.2 JOINTS

- A. Joints for the polyvinyl chloride pipe shall be push-on bell and spigot joints using elastomeric ring gaskets. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, as well as petroleum products (oil, gasoline, etc.) and groundwater, and which will endure permanently under the conditions of the proposed use. The joints shall conform to ASTM Standard Specifications for Joints for Drain and Sewer Plastic pipes using Flexible Elastomeric Seals, Designation D3212.

2.3 INSPECTION, TESTS AND ACCEPTANCE

- A. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the above-mentioned ASTM Specifications. In addition, the pipe shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such tests as he deems necessary.
- B. All tests shall be made in accordance with the methods prescribed by the above mentioned ASTM Specifications, and the acceptance or rejection shall be based on the test results.
- C. The Contractor shall furnish all labor to assist the Engineer in inspecting the pipe. Pipe will be inspected upon delivery, and such as does not conform to the requirements of this

POLYVINYL CHLORIDE GRAVITY PIPE

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contract shall be rejected and shall immediately be removed from the project site by the Contractor.

PART 3-EXECUTION

3.1 HANDLING PIPE

- A. All pipe shall be stored at the site until installation in a manner which will keep the pipe at ambient outdoor temperatures. Temporary shading shall be provided as required to meet this requirement. Simply covering the pipe which allows temperature build-up when exposed to direct sunlight will not be permitted.
- B. Care shall be taken to avoid damaging the pipe and fittings.

3.2 INSTALLATION

- A; Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16-inch per foot of length. If a piece of pipe fails to meet this requirement for straightness, it shall be rejected and removed from the site. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.
- B. No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Crushed stone shall be as specified in Section 02435.
- C. Suitable bell holes shall be provided, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material. Special care shall be taken to hold the trench width at the crown of the pipe to the maximum indicated on the Trench Detail included in the Details section of these specifications.
- D. All pipe fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.
- E. Pipe and fittings shall be installed to the lines and grades indicated on the Drawings. Care shall be taken to ensure true alignments and gradients.
- F. Before any joint is made, the previously installed unit shall be checked to assure that a close joint with the adjoining unit has been maintained that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.
- G. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer 's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.

POLYVINYL CHLORIDE GRAVITY PIPE

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- H. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.
- I. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.
- J. Details of gasket installation and joint assembly shall follow the directions of the manufacturers of the joint materials and of the pipe, all subject to review by the Engineer. The resulting joints shall be watertight and flexible.
- K. All premolded gasket joint polyvinyl chloride pipe of a particular manufacturer may be rejected if there are more than five unsatisfactory joint assembly operations or "bell breaks" in 100 consecutive joints, even though the pipe and joint conform to the appropriate ASTM Specifications as hereinbefore specified. If the pipe is unsatisfactory, as determined above, the Contractor shall, if required, remove all pipe of that manufacturer of the same shipment from the work and shall furnish pipe from another manufacturer which will conform to all of the requirements of these specifications.
- L. Open ends of pipe and branches shall be closed with polyvinyl chloride stoppers secured in place in an acceptable manner.
- M. After each pipe has been properly bedded, enough crushed stone shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes, provided for jointing, shall be filled with crushed stone and compacted, and then crushed stone shall be placed compacted to complete the pipe bedding.
- N. The Contractor shall take all precautions to prevent flotation of the pipe in the trench.
- O. At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.
- P. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.
- Q. Pipelines shall not be used as conductors for trench drainage during construction.

3.3 ALLOWABLE PIPE DEFLECTION

- A. Pipe provided under this Specification shall be so installed as to not exceed a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
- B. Upon completion of a section of pipe, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance

POLYVINYL CHLORIDE GRAVITY PIPE

with the recommendations of the pipe manufacturer, and be reviewed by the Engineer. The section of pipe must be placed and backfilled for a minimum of 90 days before the deflection can be measured.

- C. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem without additional compensation.

3.4 CLEANING

- A. Care shall be taken to prevent earth, water and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water and debris from entering any existing pipe.

3.5 TESTING OF PIPE

- A. If the visual inspection of the completed pipe or any part thereof shows any pipe, manhole or joint which allows infiltration of water in a noticeable stream or jet, the defective work or material shall be replaced or repaired as directed.
- B. After completing installation and backfill of pipe, the Contractor shall, at his expense, conduct a line acceptance test using low pressure air.
- C. Equipment used shall meet the following minimum requirements.
- D. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
- E. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
- F. All air used shall pass through a single control panel.
- G. Three individual hoses shall be used for the following connections.
 - 1. From control panel to pneumatic plugs for inflation.
 - 2. From control panel to sealed line for introducing the low pressure air.
 - 3. From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.
- H. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psig. The sealed pipe shall be pressurized to 5 psig. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

POLYVINYL CHLORIDE GRAVITY PIPE

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- I. After a manhole to manhole reach of pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psig. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any groundwater that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.
- J. After the stabilization period (3.5 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any groundwater that may be over the pipe) is not less than the time shown for the given diameter in the following table.

Pipe Diameter	Specification Time for Length Shown (min:sec)			
<u>Inches</u>	<u>100ft.</u>	<u>200ft.</u>	<u>300ft.</u>	<u>400ft.</u>
6	5:40	5:40	5:40	5:42
8	7:34	7:34	7:36	10:08
10	9:26	9:26	11:52	15:49
12	11:20	11:24	17:05	22:47
15	14:10	17:48	26:42	35:36
18	17:00	25:38	38:27	51:16
21	19:50	34:54	52:21	69:48
24	22:47	45:34	68:22	91:10

- K. In areas where groundwater is known to exist, the Contractor shall install a 1/2-inch diameter capped pipe nipple, approximately 10-inches long, through the manhole wall adjacent to one of the sewer lines entering the manhole. This shall be done at the time the line is installed. Immediately prior to the performance of the Line Acceptance Test, the groundwater shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-112 feet, then the added pressure will be 5 psig. This increases the 3.5 psig to 8.5 psig, and the 2.5 psig to 7.5 psig. The allowable drop of one pound and the timing remain the same). In no case shall the starting pressure exceed 9.0 psig.

3.6 TEST FAILURE

- A. If the section of pipe fails to pass the leakage and pressure test, or if there is any visible leakage, the Contractor shall locate, uncover and repair or replace the defective pipe fitting or joint and retest all at his own expense. Pipe will be considered passing only when the leakage does not exceed the above standard. Passing the test does not absolve the Contractor from his responsibility if leaks develop later within the period of warranty.

POLYVINYL CHLORIDE GRAVITY PIPE

02622-6

3.7 CONTRACT CLOSEOUT

Provide in accordance with Section 01700.

END OF SECTION 02622



FIGURE NAME:

141.000.B – TRENCH PAVEMENT DETAILS

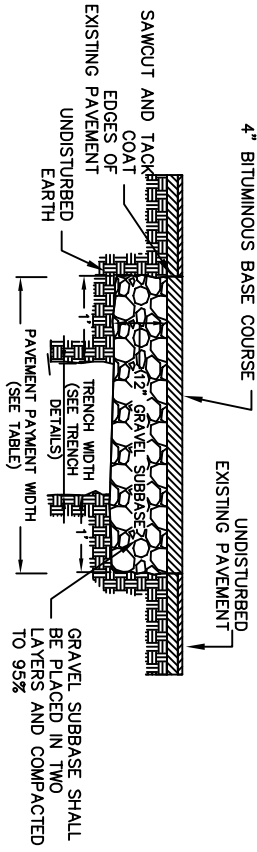
SCALE:

NOT TO SCALE

CITY OF WALTHAM, MA. – ENGINEERING DEPARTMENT

REV. DATE:

4/13/2011



TRENCH PAY LIMIT TABLE FOR TEMPORARY PAVEMENT

PIPE SIZE (I.D.)	DEPTH TO PIPE INVERT				PAVEMENT WIDTH
	0 - 8'	OVER 8' - 12'	OVER 12' - 16'	OVER 16' - 20'	
0" - 24"	6'-6"	9'-6"	12'-6"	15'-6"	PAVEMENT WIDTH
OVER 24"	O.D. + 4'-0"	O.D. + 7'-0"	O.D. + 10'-0"	O.D. + 13'-0"	

I.D. = INSIDE DIMENSION
O.D. = OUTSIDE DIMENSION

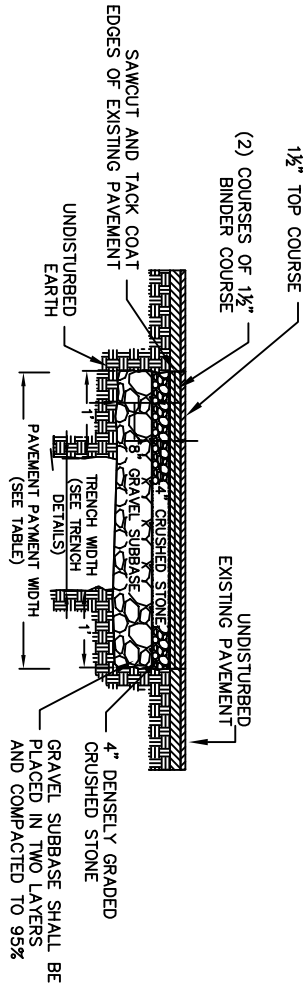
FOR EACH ADDITIONAL 4'-0" OF PIPE INVERT DEPTH OVER 20', ADD 3'-0" TO WIDTH LIMITS

TEMPORARY PAVEMENT DEPTH SHALL BE 3-IN.

TEMPORARY TRENCH PAVEMENT

DETAIL

- TEMPORARY AND PERMANENT TRENCH PAVEMENT NOTES:**
1. PERMANENT TRENCH PAVEMENT PAYMENT WIDTH SHALL BE THE TRENCH PAY LIMIT PLUS 2 FEET
 2. TEMPORARY TRENCH PAVEMENT PAYMENT WIDTH SHALL BE EQUAL TO THE TRENCH PAYMENT LIMIT
 3. REMOVE AND DISPOSE ALL TEMPORARY PAVEMENT AS REQUIRED. RESTORE AND COMPACT SUBBASE AS REQUIRED PRIOR TO PERMANENT TRENCH PAVEMENT.
 4. DEPTH OF PERMANENT TRENCH PAVEMENT SHALL BE THE SAME THICKNESS AS THE EXISTING PAVEMENT.



TRENCH PAY LIMIT TABLE FOR PERMANENT PAVEMENT

PIPE SIZE (I.D.)	DEPTH TO PIPE INVERT				PAVEMENT WIDTH
	0 - 8'	OVER 8' - 12'	OVER 12' - 16'	OVER 16' - 20'	
0" - 24"	8'-6"	11'-6"	14'-6"	17'-6"	PAVEMENT WIDTH
OVER 24"	O.D. + 6'-0"	O.D. + 9'-0"	O.D. + 12'-0"	O.D. + 15'-0"	

I.D. = INSIDE DIMENSION
O.D. = OUTSIDE DIMENSION

FOR EACH ADDITIONAL 4'-0" OF PIPE INVERT DEPTH OVER 20', ADD 3'-0" TO WIDTH LIMITS

PERMANENT TRENCH PAVEMENT

DETAIL