

ADDENDUM NO. 1

TO

BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS

FOR

GRANITE STATE BUSINESS PARK WATER MAIN EXTENSION

ROCHESTER, NH

BID NO. 20-03

7/12/2019



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As a point of clarification, it should be understood that the Contract Documents govern all aspects of the project. Discussions held during the Pre-Bid Conference or over phone or email are informal and informational only. All official changes to the Contract Documents are made only by addenda. The following changes and additional information are hereby made a part of the Contract Documents:

BID OPENING DATE CHANGE

The **Bid Opening Date** for this project has been changed to **Thursday July 25, 2019**. Bids must be received by 2:15pm local time; and, bids will be publicly opened at 2:30pm local time on that same day.

QUESTIONS

- 1. Q: Will the City or Wright-Pierce be coordinating with NH Northcoast Railroad on their requirements for flaggers and other items related to work with-in the railroad?*

A: There is no existing crossing of the railroad tracks for construction traffic planned as the work required for the jack and bore is to be outside of the railroad corridor. The Owner and Engineering will facilitate discussions with the railroad if the Contractor determines it beneficial to have a crossing for the work. The Owner will not bear any additional cost related to any potential crossing.

- 2. Q: Is there separate insurance required for work within or adjacent to the railroad as required by the railroad?*

A: Yes, the insurance requirements by the railroad is separate to the general contract insurance. The Railroad's Requirement for Work on NH Northcoast Right-of Way is included in this addendum.

- 3. Q: Who is to be responsible with adherence to wetlands permit?*

A: The Contractor's is responsible for adherence to the conditions of the wetland permit. The Owner will be retaining a Certified Wetland Scientist for construction monitoring

purposes in wetland areas. The Contractor shall be responsible for abiding with the conditions of the wetland permit as determined by the Certified Wetland Scientist at no additional cost to the Owner.

4. **Q: *Will trench dewatering be allowed to install the water main in wetlands areas?***

A: For full clarification, see the email from the Wetlands Bureau reviewer included as an attachment at the end of this addendum. If dewatering is necessary in non-water excavations, then discharge from dewatering is allowed so long as it is done following appropriate erosion and sediment control measures (see email clarification).

5. **Q: *Are the wetlands flagged?***

A: The wetlands shown on the plans were flagged in the fall of 2018. Wetlands shall be reflagged by Owner prior to the start of Construction. Additional reflagging of wetlands beyond the initial flagging for the Contractor's convenience will not be completed at the Owner's expense.

6. **Q: *Is there flexibility with the 7:30am-5pm working hours on Shaw Drive and on Albany property?***

A: Work on Albany property after business hours (5pm) should be coordinated and confirmed ahead of time with Albany management. The City allows work hours to begin at 7 am and run until 5pm on Shaw Drive. Work hours after 5pm will need to be confirmed ahead of time with the Owner and Engineer.

7. **Q: *Is it correct that work days over 8 hours is overtime pay paid by the contractor for engineer's resident on site overtime?***

A: Yes

8. **Q: *Does the jack and bore under the railroad need to be continuous until finished?***

A: The intent in the railroad's requirement for continuous installation until finished is to ensure that the jack and bore is started and completed in a reasonable timeframe. The railroad asks for assurance that a partial bore across the tracks will not be left incomplete where it could cause damage or undermine the track. Advance notice should be given to railroad chief engineer by the Contractor for the proposed start and end schedule for the jack and bore.

9. **Q: *The specifications call for both ends of the casing pipe to be sealed off by grout. The current size of casing pipe makes space tight, is this still required?***

A: The casing pipe size has been increased to a minimum of 36-inch diameter steel pipe as outlined in the revised plans and specifications included in this addendum.

10. Q: ***Is the alignment on Shaw Drive marked and able to follow?***

A: The alignment on Shaw Drive is not marked on the pavement but can be followed along the existing roadway. Starting from the valve cluster on the Whitehall Road/ Shaw Drive intersection, the alignment can be followed along the edge of the pavement to the transition to class 6 road and then from the approximate center line of the class 6 road to the railroad crossing.

11. Q: ***Is backflow prevention device testing included in the specifications and contract?***

A: Yes, the contractor will be responsible for testing of the backflow prevention devices by a certified tester/inspector. Copies of all test reports to be submitted to the Owner. Work shall not be approved until passing test results are received.

12. Q: ***Is an Engineer's estimate available?***

A: No. The policy of the Owner is not to release engineer's estimates.

13. Q: ***The valve vault detail shows a knockout for electrical. Is the electrical conduit/conductors by others? If not, please provide additional information.***

A: Electrical conduit may be needed for a sump pump if a drain to open outlet cannot be established. Also, the contractor will provide a ½" conduit through the electrical knockout in the vault to a 4x4 post covered in a vinyl sleeve for mounting of meter reading equipment. Actual meter reading equipment to be provided by others (City). This will be further detailed in a following addendum.

14. Q: ***The bid item #9 for test pits is per each, however the measurements and payments section of the spec has test pits paid per CY. Please clarify.***

A: The test pits shall be measured and paid for per each test pit excavated as stated in the bid form section of the contract documents. The revised measurement and payment section of the contract documents is included in the following sections of this addendum.

15. Q: ***Please confirm who is responsible for the wetland permit conditions including; marking out wetlands, wetland or soil scientist to monitor project, follow up report, on-site supervision of wetland or soil scientist, etc.***

A: The Contractor's work shall be conducted in accordance to all permit conditions. The Owner shall be providing services to mark out the wetlands, monitor construction in wetland areas and developing follow up reports.

16. Q: ***What are the pay limits for the trench patch paving?***

A: The pay limits are defined on the contract drawings sheet C-9 details for both final trench paving and temporary (trench patch) trench paving requirements.

17. Q: ***What is the difference between the pay items 2A., 2B. Furnish and Install 12-inch and 8-inch Ductile water main and 3 Furnish and Install Ductile Iron fittings?***

A: Pay Items 2A and 2B cover material and labor required for the installation of 12-inch and 8-inch ductile iron pipe. Pay Item 3 covers the material and labor required for the installation of all the 12-inch and 8-inch ductile iron fittings. See the revised measurement and payment section of the specifications included in this addendum for modifications to these the pay item descriptions.

18. Q: *Culvert to be replaced: replace with like pipe, or is an alternate acceptable (i.e., HDPE for CMP)?*

A: The replacement culvert shall be 15-inch, RCP pipe as noted in the revised drawing sheet C-3 included with this addendum.

19. Q: *Drawing C-8 profile and plan views show 12" gate valve at STA 35+15, but no gate valve at the same station is shown or indicated on Drawing C-5 profile or plan views. Please clarify.*

A: The 12-inch gate valve is to be installed at STA 35+15 as shown on drawing C-8. This gate valve has been added to the revised drawing sheet C-5, included with this addendum.

20. Q: *Would a "grip" style gasket (Field-Lok or equal) be acceptable to restrain pipe from STA35+15 to 36+35 instead of using MJ joint DI pipe?*

A: Restrained Joint DI pipe is to be used between the vales from STA 35+15 to STA 36+35.

21. Q: *Is the use of Foster adapters to attach valves to tees accepted by the City of Rochester Water Works?*

A: The use of Foster adapters will be allowed.

GENERAL PROJECT AND DOCUMENTS CLARIFICATIONS

1. The cover page of the specification reads "Shaw Drive Water Main Improvements" and should be updated to read "Granite State Business Park Water Main Extension."

SPECIFICATIONS

DIVISION 0 –REPLACE Section 00310 Bid Form with the attached.

DIVISION 1 – REPLACE Section 01150 Measurement and Payment with the attached.

DIVISION 1 - Section 01010-1.1-D-1: REMOVE "Christmas Eve" from the list of Owner's Legal Holidays.

DIVISION 1 – Section 01010-1.1-D-2: REPLACE paragraph D.2 with the following:

Work involving machinery or any other work which results in a noise nuisance in abutting areas shall not be started prior to **7:00 AM** or continue past 5:00 PM.

DIVISION 1 - Section 1400, 1.8 Lab testing: **REPLACE** paragraph F.3 with the following:

Retesting: Costs of retesting due to non-compliance will be paid by **CONTRACTOR**. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.

DIVISION 2 - Section 02435, 2.1 Materials: **REPLACE** paragraph A with the following:

- A. Specifications of the culvert at the intersection of Whitehall Rd. And Shaw Dr. are as follows
- a. The replacement pipe will be upsized from 12-inch to 15-inch and made out of reinforced concrete (RCP).

DIVISION 2 – **REMOVE Section** 02855 Pipe Under Railroad Tracks and **REPLACE** with Section 02855 Pipe Boring and Jacking Under Railroad Tracks.

DIVISION 2 – **ADD** Section 02620 Temporary Water Main

DRAWINGS

REMOVE and REPLACE Drawing C-3. A stop bar at the intersection of Shaw Drive and Whitehall Road has been added. The culvert at the intersection of Shaw Drive and Whitehall Road has been changed to be replaced with a 15-inch RCP pipe culvert.

REMOVE and REPLACE Drawing C-5. The 24-inch casing sleeve pipe has been changed from 24-inch to 36-inch diameter steel casing sleeve pipe. A 12-inch gate valve at the north side of the sleeve has been added.

REMOVE and REPLACE Drawing C-6. A note has been added to replace 4-inch wide pavement striping. A note has been added to replace 12-inch wide stop bar.

REMOVE and REPLACE Drawing C-7. A note has been added to replace 4-inch wide pavement striping. A note has been added to replace 12-inch wide stop bar.

REMOVE and REPLACE Drawing C-8. Note 1 has been changed for the casing sleeve requirements to meet E-80 live load requirements as outlined in specification 02855. The 24-inch casing sleeve has been changed to a 36-inch steel casing sleeve.

This Addendum consists of 52 pages, which includes this Addendum document (6 pages), Revised and Additional Specifications (27 pages), Revised Drawing C-3, C-5, C-6, C-7 and C-8 (5 pages), and Appendix E (14 pages).

END OF ADDENDUM No. 1

Attachments follow.

SECTION 00310

BID FORM

PROJECT IDENTIFICATION: Granite State Business Park Water Main Extension

THIS BID IS SUBMITTED TO: City of Rochester, NH Public Works Department
31 Wakefield Street
Rochester, NH 03867

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to the Owner, as identified above.
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:
 - A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

UNIT PRICE SCHEDULE

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
1	Lump Sum	Mobilization/Demobilization		
		The sum of \$ _____	\$ _____	\$ _____

		Per Lump Sum		
2.A	5,400 LF	Furnish and Install 12-inch Ductile Iron Water Main		
		The sum of \$ _____	\$ _____	\$ _____

		Per Linear Foot		
2.B	40 LF	Furnish and Install 8-inch Ductile Iron Water Main		
		The sum of \$ _____	\$ _____	\$ _____

		Per Linear Foot		

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
3	2,000 LB	Furnish and Install Ductile Iron Fittings The sum of \$ _____	\$ _____	\$ _____

Per Pound				
4.A	14 EA	Furnish and Install 12-inch Gate Valves and Boxes The sum of \$ _____	\$ _____	\$ _____

Per Each				
4.B	2 EA	Furnish and Install 8-inch Gate Valves and Boxes The sum of \$ _____	\$ _____	\$ _____

Per Each				
5	565 CY	Ledge Excavation, Disposal, and Replacement Backfill The sum of \$ _____	\$ _____	\$ _____

Per Cubic Yard				
6	4 EA	Furnish and Install Hydrant Assemblies The sum of \$ _____	\$ _____	\$ _____

Per Each				

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
7	1,000 LF	Furnish and Install 1-inch Copper Service Pipe The sum of \$ _____ \$ _____ \$ _____ _____		
Per Linear Foot				
8	17 EA	Furnish and Install 1-inch Corporation and Service Setup Assembly The sum of \$ _____ \$ _____ \$ _____ _____		
Per Each				
9	5 EA	Test Pits Excavation and Backfill The sum of \$ _____ \$ _____ \$ _____ _____		
Per Each				
10.A	367 Ton	Furnish and Install Initial Bituminous Concrete Pavement for Trench The sum of \$ _____ \$ _____ \$ _____ _____		
Per Ton				
10.B	220 Ton	Furnish and Install Final Bituminous Concrete Pavement for Trench The sum of \$ _____ \$ _____ \$ _____ _____		
Per Ton				

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
11	Allowance	Flagger for Traffic Control The sum of \$ <u>twenty thousand dollars</u> <u>and no cents</u>	\$ <u>20,000</u>	\$ <u>20,000</u>
<hr/> Allowance				
12	100 LF	Rail Road Crossing The sum of \$ _____	\$ _____	\$ _____
<hr/> Per Linear Foot				
13	1 EA	Furnish and Install Meter Vault The sum of \$ _____	\$ _____	\$ _____
<hr/> Per Each				
14	20 LF	Furnish and Install Chain-link Fence The sum of \$ _____	\$ _____	\$ _____
<hr/> Per Linear Foot				
15	1 EA	Furnish and Install Locking Double-Swing Gate The sum of \$ _____	\$ _____	\$ _____
<hr/> Per Each				

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
16	1 EA	Furnish and Install 15-inch Culvert The sum of \$ _____ \$ _____ \$ _____ _____		
Per Each				
17	100 LF	Furnish and Install Stop Bars The sum of \$ _____ \$ _____ \$ _____ _____		
Per Linear Foot				
18	1,600 LF	Furnish and Install 4-inch Wide Pavement Stripping The sum of \$ _____ \$ _____ \$ _____ _____		
Per Linear Foot				

* Indeterminate quantities assumed for comparison of bids. Quantities are not guaranteed. Payment will be based on actual quantities constructed.

SUBTOTAL: Total of Items 1 through 18 above.

_____ (\$ _____)
 _____ (use figures)

(use words)

5.01 Time of Completion BIDDER AGREES THAT THE WORK WILL BE SUBSTANTIALLY COMPLETE WITHIN 120 CALENDAR DAYS AFTER THE DATE WHEN THE CONTRACT TIMES COMMENCE TO RUN AS PROVIDED IN PARAGRAPH 4.01 OF THE GENERAL CONDITIONS, AND WILL BE COMPLETED AND READY FOR FINAL PAYMENT IN ACCORDANCE WITH PARAGRAPH 15.06 OF THE GENERAL CONDITIONS WITHIN 150 CALENDAR DAYS AFTER THE DATE WHEN THE CONTRACT TIMES COMMENCE TO RUN.

5.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 6 – ATTACHMENTS TO THIS BID

6.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid security;
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. List of Project References;
- E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
- F. Contractor's License No.: _____
- G. Required Bidder Qualification Statement with supporting data; and

ARTICLE 7 – DEFINED TERMS

7.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

The rest of this page is intentionally left blank.

7.02

ARTICLE 8 – BID SUBMITTAL

BIDDER: [Indicate correct name of bidding entity]

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

END OF SECTION

SECTION 01150AMEASUREMENT AND PAYMENTPART 1 - GENERAL1.1 DESCRIPTION

- A. For lump sum items, payment shall be made to the contractor in accordance with an accepted progress schedule and schedule of values on the basis of actual work completed.
- B. For unit-price items, payment shall be based on the actual amount of work accepted and for the actual amount of materials in place, as shown by final measurements.
 - 1. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.
 - 2. At the end of each day's work, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of unit price work accomplished and/or completed during the work day.
 - 3. Once each month the Contractor will produce a payment request that will be based upon quantities reconciled with the Owner and Resident Project Representative.
 - 4. After the work is completed and before final payment is made, the Engineer may make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 SCOPE OF PAYMENT

- A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents.
- B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract
- C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.3 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

- A. When alterations in the quantities of work not requiring supplemental agreements, as here in before provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

1.4 OMITTED ITEMS

- A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.5 PARTIAL PAYMENTS

- A. Partial payments shall be made monthly as the work progresses. Partial payments shall be made subject to the provisions of the Supplemental and General Conditions. The breakdown of partial payments for lump sum items shall be agreed upon at the start of the project, according to the approved schedule of values.

1.6 PAYMENT FOR MATERIAL DELIVERED

- A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used and have been delivered to the construction site, or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplemental Conditions.
- B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures of any kind which are not a permanent part of the Contract.

1.7 FINAL PAYMENT

- A. The Engineer will make, as soon as practicable after the entire completion of the project, a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to provisions of the General and Supplemental Conditions.

1.8 INCIDENTAL WORK

- A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
1. Project record documents maintained during course of project.
 2. Marking public and private utilities.
 3. Signs damaged and not scheduled for replacement.
 4. Tree trimming as required for utility installations
 5. Preparing the site for construction.
 6. Cooperation and coordination with other Contractors and utility companies including related inspection costs and other costs (Refer to Section 01050).
 7. Utility crossings and relocations, unless otherwise paid for.
 8. Temporary utility services to buildings, as required to maintain service during construction.
 9. Minor Items--such as relocation of mail boxes, curbs, traffic loop detectors, pavement markings, etc., damaged as a result of construction activities.
 10. Trench boxes, steel and/or wood sheeting as required, including that left in place.

11. Earthwork (except ledge).
12. Maintaining existing sewer flows and repair of existing sewer pipes.
13. Dewatering as necessary.
14. Dust control (Section 01562).
15. Quality assurance testing (Section 01400).
16. Final cleaning of sewers, force mains and storm drains.
17. Repair and replacement of water lines under 2-inches in size, culverts, underdrains, rock-lined drainage trenches in streets and other utilities damaged by construction activities and corresponding proper disposal of removed materials unless otherwise paid for.
18. Temporary construction necessary for construction sequencing and other facilities not permanently incorporated into the work, unless otherwise indicated.
19. Weather protection as necessary.
20. Permits not otherwise paid for or provided by the Owner.
21. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
22. All excavation except the test pits specifically shown or ordered by the Engineer to establish sewer line and water line locations, earth excavation below grade and rock excavation.
23. Test pits to establish in place field soils density, groundwater conditions, or requirements for dewatering and all others test pitting for the Contractor's convenience.
24. Pipe markings.
25. Removal of existing castings, signs and existing granite curbing and transport to City of Rochester Public Works Facility.
26. Winterization of site.
27. Temporary sheds, field offices, telephone, power, water and sanitation facilities for the contractors own needs and those of any subcontractor.
28. Project record documentation (Section 01720).
29. Preconstruction Photos and Videos.
30. Construction Administration and Insurance.

1.9 DESCRIPTION OF PAY ITEMS

- A. The following sections describe the measurement of and payment for the work to be done under the respective items listed in the Bid Form.
- B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

Item No. 1 – Mobilization and Demobilization

- A. Method of Measurement: Mobilization and Demobilization shall be paid for on a lump sum basis. The amount bid for this item shall not exceed 10% of the Base Bid.
- B. Basis of Payment: Mobilization/demobilization costs are those costs of initiating and ending the contract. Payment for mobilization/demobilization shall be a lump sum at the price bid as stated in the Bid Form. One half of the lump sum will be payable when the Contractor is operational on the site and the remaining half of the lump sum will be

payable when the Contractor leaves the site following completion of all contract work. For purposes of payment on this item, "operational" shall mean the Engineer has approved the following: Construction Schedule, Erosion Control Plan, SWPPP plan, Traffic Control Plan, and pre-construction photographs. Only one lump sum payment divided into the two partial payments described herein shall be made to cover all mobilization/demobilization costs throughout the entire contract including but not limited to Preconstruction photographs and documentation, bonds, insurance, contract administration, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.

Item No. 2A and 2B - Furnish and Install 12-inch and 8-inch Ductile Iron Water Main

- A. Method of Measurement: The quantity of water main to be paid for under this item shall be the actual length in feet as measured along the center line of the pipe as laid including all fittings and valves.
- B. Basis of Payment:
 - 1. Water main shall be paid for at the unit price per linear foot stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all pipes, polywrap, labor, equipment, tools, and other materials required for the installation of the pipelines; for installing the polywrap; for excavating, laying, setting, and jointing all pipes and fittings; for connections to existing pipes; for dewatering; for furnishing and placing all bedding, haunching and initial backfill; for backfilling; for thrust blocks and supports; for restraining joints; saddles; for furnishing and placing all temporary sheeting and bracing; for cleaning and testing; for removal and disposal of existing water lines being replaced within the trench; for all labor, tools and construction equipment; and for all other work and expenses incidental thereto for which payment is not provided under other items.
 - 2. Payment for fire hydrant branch piping will be paid for under the Furnish and Install Hydrant Assemblies Item.
 - 3. Payment for this work on interim requisitions shall be according to the following percentages:
 - a. Water main successfully set in place and backfilled - 80 percent.
 - b. Water main pressure tested and disinfected - 20 percent.

Item No. 3 – Ductile Iron Fittings

- A. Method of Measurement: Ductile Iron Fittings measured for payment shall be the actual weight of ductile iron fittings furnished and installed complete in place.
- B. Basis of Payment: Ductile Iron Fittings shall be paid for at the unit price per pound stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment and tools; for installing, setting, and joining, and protective polyethylene wrap; and for all other work and expenses incidental thereto. Mechanical joint restraints and thrust blocks shall not be included in the fitting weight for payment and are considered incidental to this item.

Item No. 4A and 4B - Furnish and Install 8-inch and 12-inch Gate Valves

- A. Method of Measurement: The quantity of gate valves to be paid for under this item shall be the actual number of valves and valve boxes installed complete in place. Payment for gate valves installed on hydrant branches shall be paid for under the Furnish and Install Hydrant Assemblies Item.
- B. Basis of Payment: Gate valves shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, polywrap, and tools; for installing, setting, and jointing the valve and valve box; for restraining joints; for thrust blocks and supports; for valve box extensions; for testing all valves and valve boxes; and for all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. 5 – Ledge Excavation, Disposal, and Replacement Backfill

- A. Method of Measurement: Ledge excavation measured for payment shall be the number of cubic yards of ledge removed during construction. This quantity shall be determined by:
 - 1. Exposing the ledge profile for measurement. Excavation and backfill of the earth overburden shall be considered incidental, and no separate payment shall be made therefore.
 - 2. Should the Contractor elect to pre-drill and blast ledge without exposing the ledge surface for measurement, ledge depths shall be determined by the Resident Project Representative at the time of drilling or, when direct drilling observation is not conducted, the ledge profile shall be measured after excavation, and 20% of the ledge volume thus measured shall be deducted due to ledge expansion caused by the blasting operation.
 - 3. The payment limit for trench width shall be between vertical planes which are a distance apart equal to the sum of 18 inches plus 1-1/3 times the nominal outside diameter of pipe which is to be installed in the trench (min. of 3 feet) and extending from the top of the ledge surface to a depth of 6 inches below the invert grade of the pipe. Where two pipes are installed in the same trench, trench ledge excavation shall be measured as the actual volume of ledge removed between vertical planes which are a distance apart equal to the sum of 3 feet plus the sum of the pipes nominal outside diameter. Where three pipes are installed in the same trench, trench ledge excavation shall be measured as the actual volume of ledge removed between vertical planes which are a distance apart equal to the sum of 4.5 feet plus the sum of the pipes nominal outside diameter.
 - a. Ledge excavation for structures (including manholes) shall be measured as 18 inches outside the structure and extending to a depth of 6 inches below the base of the structure indicated on the Drawings.
 - b. Rocks or boulders greater than two cubic yards volume shall be considered as ledge excavation. Volume of rocks shall be determined from their average length, width, and depth as measured by the Engineer.
- B. Basis of Payment: The contract unit price per cubic yard for ledge excavation shall be full compensation for all labor, materials, tools and equipment necessary to complete the excavation including conducting the pre-blast survey, drilling, blasting,

excavating, loading and disposing the excess or unusable material outside the work limits, suitable replacement backfill, and all else incidental thereto for which payment is not provided under other items.

Item No. 6 - Furnish and Install Hydrant Assemblies

- A. Method of Measurement: The quantity of hydrant assemblies to be paid for under this item shall be the actual number installed complete in place.
- B. Basis of Payment:
 - 1. Hydrant assemblies shall be paid for at the unit price for each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing, setting, and jointing; for excavation; for removal of existing hydrants where directed; for all thrust blocks and supports; restraining joints; for the hydrant branch gate valve, tee, pipe and hydrant; hydrant snow markers; polywrap; cleaning, testing and disinfection and of all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. 7 - Furnish and Install 1-inch Copper Service Pipe

- A. Method of Measurement: The quantity of service pipe to be paid for under this item shall be the actual length in feet as measured along the center line of the pipe as laid.
- B. Basis of Payment: Pipe shall be paid for at the unit price per linear foot stated in the Bid Schedule. Said unit price shall be full compensation for all service pipe and fittings, labor, equipment, tools, and other materials required for the installation of service pipes; for excavating, laying, setting, and jointing all pipes and fittings; dewatering; for making all connections to existing services; for cleaning, testing, and disinfecting; for backfilling; for replacing or rebuilding shrubs, fences, lawns, trees, or other materials, except other such items specifically included in the Bid Schedule; and for all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. 8 - Furnish and Install 1-inch Corporation and Service Setup Assembly

- A. Method of Measurement: The quantity of 1-inch corporation and service setup assemblies to be paid for under this item shall be the actual number furnished and installed for service connections.
- B. Basis of Payment: 1-inch corporation and service setup assemblies shall be paid for at the unit price per each 1-inch corporation and service setup assembly stated in the Bid Schedule. Said unit price shall be full compensation for all fittings, labor, equipment, tools, and materials required for the installation of the 1-inch corporation stop installed in main, curb stop and box installed to the right of way, protection of services, curb stops and boxes for the duration of project, and the connection of service and all service pipe required; for excavating and backfilling, raising to grade, for replacing or rebuilding shrubs, fences, lawns, trees, tapping of main, and all materials except other such items specifically included in the Bid Schedule; and for all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. 9 - Test Pit Excavation and Backfill

- A. Method of Measurement: The quantity to be paid for under this item shall be the actual number of test pits excavated as authorized by the Engineer.
- B. Basis of Payment: Test pit excavations shall be paid for at the unit price per each test pit excavated as stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all labor, tools, and equipment; for excavation, backfilling and compacting; for temporary pavement; providing the test pit result information to the Engineer and for all other work and expenses incidental thereto for which payment is not provided under other items.

Items No. 10A and 10B – Furnish and Install Initial and Final Bituminous Concrete Pavement for Trench

- A. Method of Measurement:
 - 1. The quantity of bituminous concrete pavement to be paid for under this item includes:
 - a. Machine placed - The number of tons of machine placed pavement within the limits as shown on the drawings.
 - b. Hand Placed - The number of tons of hand placed pavement within the limits as shown on the drawings.
 - c. Actual widths will be used in computing areas wherever the width of pavement is less than the above specified limits.
 - 2. The conversion factor to change volume of bituminous concrete pavement measured in place to tons will be 0.055 tons per square yard per inch of thickness.
- B. Basis of Payment:
 - 1. Pavement shall be paid for at the Contract unit price per ton or square yard stated in the Bid Schedule.
 - 2. Said unit price shall be full compensation for furnishing all materials, labor, equipment and tools necessary for the placement of all bituminous materials, including, preparation of base material, application of tack coat and seam “shoe” if requested. No additional payment will be made to the contractor for repair work done by him in maintaining bituminous concrete pavement.

Item No. 11 Flaggers for Traffic Control

- A. Method of Measurement: Flaggers for Traffic Control will be paid an allowance as stated in the bid schedule.
- B. Basis of Payment:
 - 1. The payment shall be full compensation for furnishing flaggers for traffic control completed to the satisfaction of the Owner and Engineer. The payment shall be on an hourly basis per flagger, and payment shall be based on invoiced hours for this project.
 - 2. Payment will only be made if the traffic control effort is satisfactory to the Owner/Engineer. Contractor will be notified if daily effort is not satisfactory, such that improvements can be made in order to receive full payment under the item. Owner reserves the right to make partial payment or no payment under this item if traffic control is not to the Owner’s satisfaction.

Item No. 12 – Rail Road Crossing

- A. Method of Measurement - Payment for specialty pipe installations shall be full compensation for all work indicated within the limits detailed on the plans.
- B. Basis of Payment:
 - 1. The contract lump sum price for installation of casing pipe, water main and appurtenances across the existing rail road easement shall be full compensation for labor, materials, tools and equipment necessary to complete the work including; jacking; excavation; pipe, casing, casing spacers, casing ends, sand fill/ballast, valves, fittings and appurtenances; backfill, dewatering, concrete work, rail road fees and any associated costs of the rail road and all else incidental thereto for which payment is not provided under other items.

Item No. 13 – Furnish and Install Meter Vault

- A. Method of Measurement - Payment for meter vault installation shall be full compensation for all work indicated within the limits detailed on the plans.
- B. Basis of Payment:
 - 1. The contract lump sum price for installation of precast meter vault, meter, and dual check valve backflow preventers, shall be full compensation for labor, materials, tools and equipment necessary to complete the work including; excavation, pipe, valves, fittings and appurtenances; backfill, dewatering, concrete work, and any associated costs of the vault and all else incidental thereto for which payment is not provided under other items.

Item No. 14 – Furnish and Install Chain-link Fence

- A. Method of Measurement: The quantity of chain-link fence to be paid for under this item shall be the actual quantity installed complete in place.
- B. Basis of Payment:
 - 1. Chain-link fence shall be paid for at the unit price for each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing; for excavation; for removal of existing posts and chain; and of all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. 15 – Furnish and Install Locking Double-swing Gate

- A. Method of Measurement: The quantity of double-swing gate to be paid for under this item shall be the actual number installed complete in place.
- B. Basis of Payment:
 - 1. Double-swing gate shall be paid for at the unit price for each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing; for excavation; for removal of existing posts and chain; and of all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. 16 – Furnish and Install 15-inch Culvert

- A. Method of Measurement - Payment for culvert installation shall be full compensation for all actual number installed complete as detailed on the plans.
- B. Basis of Payment:
 - 1. The contract lump sum price for installation of culvert, shall be full compensation for labor, materials, tools and equipment necessary to complete the work including; excavation, pipe, fittings and appurtenances; backfill, dewatering, concrete work, and any associated costs of the culvert and all else incidental thereto for which payment is not provided under other items.

Item No. 17 and 18 - Furnish and Install Stop Bars and 4-inch Wide Pavement Striping

- A. Method of Measurement: Stop bars shall be measured as the actual length of the stop bars installed. The quantity of 4-inch wide pavement stripes to be paid for under this item shall consist of the actual number of linear feet of single width stripes placed at the direction of the Engineer within the payment limits shown on the Drawings.
- B. Basis of Payment:
 - 1. Payment for Stop Bars and 4-inch wide stripes shall be paid at the Contract Unit Prices per linear feet stated in the Bid Schedule.
 - 2. Said unit price shall be full compensation for furnishing all materials, labor, equipment and tools necessary for furnishing and placement of striping and stop bars.

END OF SECTION

SECTION 02620TEMPORARY WATER MAINPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish, install and test all fused high density polyethylene (HDPE) or polyvinylchloride (PVC) temporary water pipe, pipe fittings and services and appurtenances of the type(s) and size(s) and in the location(s) as shown on the Drawings and as herein specified.
- B. Related Work Specified Elsewhere:
 - 1. Cleaning, Testing, and Disinfection is specified in Specification Section 02675.

1.2 PROJECT CONDITIONS

- A. The work includes the installation of a temporary water main in order to by-pass an existing water distribution system main that is to be rehabilitated or removed and replaced. The temporary water main will provide potable water service to the existing customers in the project area.
- B. The water distribution system experiences water pressures of approximately 80 psi in this area of the distribution system.
- C. The Contractor shall obtain approval from the local Fire Department for the proposed plan prior to proceeding.
- D. The Contractor shall coordinate with the Water Department before making the connection of the temporary water main to the existing water distribution system.
- E. Temporary water mains shall not be installed or in operation between October 15 and April 15.

1.3 SUBMITTALS

- A. Temporary Bypass Plans shall be submitted to Engineer for review and approval prior to installation. Bypass plans shall include and consider the following:
 - 1. Proposed schedule for installing, testing, disinfecting, operating, and removing the temporary bypass.
 - 2. All components of the bypass shall be for potable water transmission and distribution with a minimum pressure rating of 150 psi. All plastic pipe or hose shall be designated or certified for potable/residential water use and must meet NSF/ANSI Standard 61 Certification.
 - 3. Details of the materials, size, and location of temporary facilities including bypass mains, valves, connections, laterals, services, and fire hydrants.
 - 4. Bypass mains shall be supplied by at least two connections to the existing system either via an existing hydrant or a direct connection to an underground main.
 - 5. Bypass mains shall be sized as required by the local Fire Department when supplying water for fire protection to temporary hydrants. Temporary hydrants shall be located in the same approximate location as existing hydrants that have

been placed out of service and bagged and tagged "Hydrant Out of Service". The number of hydrants on the temporary bypass shall be greater than or equal to the number of existing hydrants that are placed out of service.

6. Minimum size of bypass mains that do not supply water for fire protection is 2-inches. All temporary services shall be greater than or equal to the diameter of the existing service.
7. Bypass mains shall be laid outside of the traveled and access ways whenever possible and trenched when crossing roadways. Temporary mains shall be ramped when crossing driveways. All services shall be ramped or trenched.
8. All plans shall include provision of twenty-four/seven contact information for operation and maintenance of the bypass system.
9. Pressure testing and disinfection testing shall comply with the requirements the applicable AWWA Standards and of Section 02675 prior to placing temporary water main into service.
10. All work shall be coordinated with Engineer, Water Department and the Fire Department and no construction activity shall commence without a minimum of 48 hours advance notice to each department.
11. A backflow prevention device (approved by the Water Department) shall be installed at connections to the distribution system.
12. Isolation valves shall be included in the bypass system at 500 foot intervals.
13. Bypass pipe ends shall have blow-off taps to allow for flushing and water quality inspections.

1.4 QUALITY ASSURANCE

- A. Provide pipe and fittings manufactured by a single manufacturer.
- B. Pressure rating or pressure class of pipe as detailed herein.
- C. Standards:
 1. ASTM D 1248 Polyethylene Plastics Molding and Extrusion Materials.
 2. ASTM D 1505 Density of Plastics by the Density Gradient Technique.
 3. ASTM D 1693 Environmental Stress Cracking of Ethylene Plastics.
 4. ASTM D 4703 Preparation of Compression Molded Polyethylene Test Samples.
 5. ASTM D 1784 - Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (PVC) Compounds.
 6. ASTM D 2241 - PVC Pressure Rated Pipe (SDR Series).
 7. ASTM D 3139 - Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
 8. NSF/ANSI 61 – Drinking Water System Components – Health Effects
- D. Acceptable Manufacturers:
 1. Ryerson & Son, Inc. "Mono-Line"
 2. Dupont, "Aldyl-D"
 3. Sheldon "Sclairpipe"
 4. Certainteed Yelomine PVC
 5. Or approved equal.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Pipe:
 - 1. The pipe shall be obtained by polymerization of no less than 85% ethylene and no less than 95% of total olefins by weight.
 - 2. The polyethylene resin shall be classified as a Type III, Class C, Category 3. Nominal density shall be 0.941 to 0.959.
 - 3. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black, well dispersed in a concentration of not less than 2%.
 - 4. The polyethylene resin compound shall have a resistance to environmental stress cracking as determined by procedure detailed in ASTM D 1693 with sample preparation by procedure C of ASTM D 1928 of not less than 40 hours.
 - 5. Pipe shall be homogeneous throughout and free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
 - 6. Polyethylene fittings shall have the same pressure rating as the pipe itself.
 - 7. Adaptors: When applicable, provide adaptors for connecting polyethylene pipe to pipes constructed from other materials. All flanges shall have metal backing rings.
 - 8. Pipe pressure rating shall be 150 psi (SDR-11) minimum.
- B. Polyvinyl Chloride (PVC) Pipe:
 - 1. PVC pipe shall be made from Type 1, Grade 1, 2000 psi design stress, Class 12454-B formulation Polyvinyl Chloride.
 - 2. PVC formulation shall contain impact modifiers and ultraviolet inhibitors for use in above-ground temporary applications.
 - 3. Pipe pressure rating shall be 150 psi (SDR-18) minimum.
- C. Service Corporations: Provide corporation and service saddle for all services as required.
- D. Water Main Valves: Provide gate valves at the connection to the distribution system and every 500 feet of installed temporary water main.
- E. Provide Water Department approved backflow preventers at connections to distribution system.
- F. Water Department will provide and Contractor shall install flow meter.
- G. Hydrants: Provide temporary hydrants at the approximate location of existing hydrants.

2.2 FABRICATION

- A. Polyethylene Pipe:
 - 1. Thermal Butt-Fusion:
 - a. Join the pipe to itself, or to the polyethylene fittings or to the flange connections by means of thermal butt-fusion.
 - b. Have all fusion performed by personnel trained by the pipe supplier or other qualified persons, using tools approved by the pipe supplier.

- c. The polyethylene fittings and flanged connections to be joined by thermal butt-fusion shall be from the same type, grade and class of polyethylene compound as the polyethylene pipe unless otherwise approved.
 - d. Joint strength must be equal to that of the adjacent pipe.
 - 2. Mechanical Connections: The mechanical connections of the polyethylene pipe to auxiliary equipment shall be in accordance with the pipe suppliers written instructions.
- B. Polyvinyl Chloride (PVC) Pipe:
 - 1. Fittings shall be supplied with Teflon coated "O"-ring to minimize assembly and disassembly effort required to install, remove and reinstall the system.
 - 2. Mechanical Connections: The mechanical connections of the PVC pipe to auxiliary equipment shall be in accordance with the pipe suppliers written instructions.
- C. Services:
 - 1. Services shall be polyethylene pipe or hose that are NSF/ANSI 61 Certified.
 - 2. Minimum services size shall be 3/4-inch. Larger services may be required for non-residential uses. Engineer shall determine minimum service size.

PART 3 - EXECUTION

3.1 INSTALLATION OF TEMPORARY MAIN

- A. Temporary water mains shall be placed in a manner that protects the pipeline from traffic, vandalism, etc. Pipeline shall be laid along edge of roadways or in curblines whenever possible.
- B. Water mains shall be protected at all driveway entrances and curb cuts by the use of gravel, temporary pavement, or steel access ramps. In lieu of access ramps, in areas that will have new pavement, a shallow trench may be cut to allow the shallow burial of the temporary main. If trenching is used, trenches shall be sawcut, refilled with compacted gravel and repaved with trench pavement prior to final paving.
- C. Temporary mains for all streets shall consist of a 4" main placed on one side of the street and a minimum 2" main placed on the opposite side. Branches from the 4" main to the 2" main shall consist of 4" pipe.
- D. Temporary hydrants shall be placed at existing hydrant locations or no greater than a 500' spacing.
- E. Main line valves shall be provided at a maximum spacing of no greater than 500 feet.
- F. Temporary main shall be maintained in working order until such a time that all of the structures are being served by the new main. If the temporary main fails, the CONTRACTOR shall restore the main within 12 hours. No temporary water mains or temporary water services shall be installed or operated during freezing weather. Temporary pipes already in use shall be removed or drained and existing services restored when so directed by the ENGINEER or OWNER.

3.2 INSTALLATION OF SERVICES

- A. The Contractor shall provide written notices to all affected property owners a minimum of 24 hours prior to any disruption of water service as a result of the temporary by-pass.
- B. All services tapped to the temporary main will have a shutoff at the main to allow

- isolation of the individual service.
- C. Residential services may be back-fed through an external hose bib if available. If a hose bib is utilized, Contractor shall shutoff the existing feed to the structure at the meter to prevent back-feeding the old main and shall confirm that the connection properly services the entire structure.
 - D. Pressure reducing valves shall be installed at the hose-bib connection if distribution pressures are greater than 80 psi.
 - E. For services where no external hose bib or other connection is available or larger than residential flows are required, the Contractor shall excavate the existing building service and connect the service to the temporary main with the appropriate size piping.
 - F. For fire protection (sprinkler) services, the Contractor shall coordinate with the Building Owner and Fire Department for service size and sprinkler service connection requirements. Contractor shall not connect sprinkler services without express written permission of the Building Owner.
 - G. Temporary services shall be maintained in working order until such a time that all of the structures are being served by the new main. If a temporary service fails, the CONTRACTOR shall restore the main within 12 hours.

3.3 HYDRANTS

- A. When a hydrant is removed from service, a temporary hydrant shall be installed and maintained.
- B. Hydrants that are out of service during construction operations shall be bagged and clearly marked with a "HYDRANT OUT OF SERVICE" tag.

3.4 CLEANING AND TESTING

- A. Temporary water main shall be flushed, pressure tested and disinfected in accordance with Specification Section 02675 prior to being placed in service.

END OF SECTION

SECTION 02855PIPE BORING AND JACKING UNDER RAILROAD TRACKSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Furnish all necessary materials and perform all work required to install water mains under railroad tracks as shown on the Drawings and specified herein.
2. Contractor shall pay all costs for inspection and flaggers that may be required by the Railroad.
3. The work must comply with the Railroad "Requirements for NHN Right of Way," - NHN, latest edition as well as the American Railway Engineering and Maintenance of Right-of-Way Association (AREMA) standards. The specifications are included in Appendix E of these contract documents. If a conflict exists between this Division and the Railroad Specifications, the Railroad requirements shall apply unless specifically noted otherwise. Wherever the Railroad Specifications indicate "Owner or its Contractor" the specifications shall be altered to indicate "Contractor".
4. Perform any additional work specifically required by the Railroad.

B. Related Work Specified Elsewhere: Pipe and Pipe Fittings are specified in the appropriate Sections of this Division.

1.2 INSURANCE AND CERTIFICATES

- A. Obtain and submit to the Engineer all required Federal, State and Municipal permits prior to starting work.
- B. Obtain Workman's Compensation Insurance.
- C. The Contractor shall provide an acceptable original Railroad insurance policy at least seven (7) days prior to scheduling work. No work shall be allowed until the insurance policy is accepted by the Railroad.
- D. All insurance policies shall be in effect before any work is started and remain in effect until formal acceptance of work by the Chief Engineer of the Railroad.
- E. The Contractor shall execute the Railroad's Standard Service Agreement, which shall provide engineering design review, inspection and railroad flagging protection as required and defined by the Railroad. A copy of the Standard Service Agreement is included in Appendix E of these contract documents.

1.3 INSPECTION

- A. If deemed necessary by the Chief Engineer of the Railroad, the Railroad will furnish inspectors and flaggers for the general protection of railroad property and operations. The inspection shall be at the expense of the Contractor.

1.4 SUBMITTALS

- A. Contractor shall submit to the Engineer drawings, details and associated design calculations of steering shield, jacking and receiving pits and pipe support system.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Casing Pipe (to be provided by the Contractor):
1. ASTM A-53 carbon steel, seamless.
 2. New, black steel.
 3. 36-inch Diameter.
 4. Minimum yield strength shall be 35,000 psi.
 5. Pipe wall should be of sufficient thickness as required for boring. Minimum thickness shall be 0.532 inches.
 6. The casing pipe shall be designed for Cooper's E80 Railway live loading with 50% added for impact.
- B. Carrier Pipe
1. Carrier pipe shall be 12-inch Class 52 Ductile Iron pipe as specified in Division 2.
 2. All push-on joints within the casing shall be restrained using mechanical joint fittings or similar joint restraint.
- C. Casing Spacers
1. Carrier pipe shall be centered within casing by use of Model CCS stainless steel casing spacers as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal.
 2. Casing spacer shall be a two piece shell made from T-304 stainless steel of a minimum 14 gauge thickness. Each shell section shall have one bolt flange formed with ribs for added strength. Each connecting flange shall have a minimum of three 5/16" T-304 stainless steel bolts. The shell shall be lined with a ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Bearing surfaces (runners) shall be ultra high molecular weight polymer for abrasion resistance and a low coefficient of friction. The runners shall be attached to support structures (risers) at appropriate positions to properly support the carrier within the casing and to ease installations. The runners shall be attached mechanically by punched riser section and bolt leads TIG welded for strength. Riser shall be made of T-304 stainless steel of a minimum 10 gauge. All risers over 6" in height shall be reinforced and MIG welded to the shell. Centered positioning within the casing will require the risers and runners to be dimensioned to center the carrier pipe in the casing with a top clearance of one half inch minimum. All welds and metal surfaces shall be chemically passivated.
- D. Rubber Casing End Seals
1. Rubber casing and seals shall be designed to wrap around the casing and carrier pipes after installation to provide a barrier to backfill, debris and seepage.
 2. End seals shall be manufactured of Virgin SBR with T-304 stainless steel bands to attach the seals to the casing and carrier pipes.

3. End seals shall be Cascade Model CCES End Seals as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal.

PART 3 - EXECUTION

3.1 PERFORMANCE

- A. Perform all work in accordance with the Railroad specifications.
- B. Perform all work in a manner satisfactory to the Chief Engineer of the Railroad.

3.1 CASING PIPE INSTALLATION

- A. Perform all boring and jacking by standard methods.
- B. Once work is started, perform continuous operation to prevent sleeve from "freezing".
- C. Perform proper precautions to prevent the formation of voids outside of the casing pipe due to wet soils or other reasons. If voids are formed, they shall be filled with grout.
- D. The railroad tracks and adjacent areas within the railroad right-of-way shall be kept free of obstructions.
- E. The Contractor shall be required to monitor vertical (settlement and heave) and horizontal movement of the railroad tracks above the pipe jacking site. The longitudinal limits of the track-monitoring zone shall extend a minimum of 30 feet beyond each side of the pipe, or as directed. The movement shall be monitored with an electronic distance measurement (EDM) instrument that is accurate to 0.005 feet. Each monitoring survey shall be tied into two separate benchmarks to serve as a check on the data accuracy. The same two benchmarks shall be used for each survey. The benchmarks shall be outside the influence of construction work, and shall be protected from movement. Baseline track elevations shall be taken before beginning the jacking operations. The number of monitoring points along the tracks and the frequency of measurements shall be as directed.
- F. Following each measurement of the railroad tracks, the Contractor shall report the results to the Engineer and the Railroad's authorized representative. In the event it is determined jacking operations have caused movement of the tracks, the Engineer or the Railroad's authorized representative may require the Contractor to cease operations. The jacking may not resume until measures have been taken to correct the track and prevent further disruption to the railroad tracks.
- G. Use of pilot holes and boring ahead of the sleeve will not be permitted.
- H. When the method of mechanically boring a full-sized hole is employed, the hole excavated ahead of the pipe shall be at the grade at the bottom of the pipe and no more than 0.1 foot greater than the outside limits of the pipe at the top and sides. Jetting with water will not be permitted while using this method. A positive stop must be provided to prevent an auger from advancing beyond the sleeve face.
- I. The exterior annular space around the casing shall be filled with grout under pressure in accordance with the railroad requirements.

3.2 CARRIER PIPE INSTALLATION

- A. Carrier pipe shall be inserted within the casing pipe in a centered and restrained position by use of stainless steel casing spacers. Care shall be taken during installation to keep

PIPE BORING AND JACKING UNDER RAILROAD TRACKS

the pipe from rotating and to keep the casing spacer runners aligned for the entire length of the carrier pipe.

- B. Casing spacers shall be placed at no more than 10-foot intervals with a minimum of two casing spacers per length of carrier pipe. One spacer shall be placed not more than two feet from each end of the casing.
- C. Rubber casing end seals shall be installed per the manufacturer's recommendations. Both casing and carrier pipes shall be free of dirt, debris, rough edges, burrs, etc. that might damage the end seal or prevent a tight seal from casing to carrier pipes. Stainless steel band shall be a minimum of 4-inches from the end of the casing pipe. The end seal shall be installed so as not to interfere with the weep hole drilled in the bottom of the low end of the casing pipe.
- D. The interior annular space between the casing and carrier pipe shall be filled with sand under pressure in accordance with the railroad requirements.

END OF SECTION

APPENDIX E

NEW HAMPSHIRE NORTHCOAST RAILROAD
REQUIREMENTS FOR WORK ON NHN RIGHT-OF-WAY

**NEW HAMPSHIRE NORTHCOAST RAILROAD
REQUIREMENTS FOR WORK ON NHN RIGHT-OF-WAY**

DATE _____

PROJECT DESCRIPTION

CONTRACTOR _____

ADDRESS _____

TELEPHONE _____ **FAX** _____

SIGNATURE/DATE/TITLE _____

The requirements and information contained in this package are not intended to replace or supplement the contract special provisions for this project and/or the State's Standard Specifications. The intention is to explain and emphasize the information required when work is performed on the NHN Corporation's right-of-way. Please note, the information and requirements contained in this package do fall within the scope of the special provisions and Standard Specifications.

The items covered in this package are as follows:		Page
1.	Safety – Note: Very Important	2
2.	Protective Services (Flagging) Provided by the Railroad	4
3.	Contractor's Material & Equipment Stored on NHN's Right-Of-Way	5
4.	Protection of NHN's Facilities During construction	5
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1. SAFETY

The contractor must conduct his work in a safe manner. The contractor is expected to comply with all applicable Governmental safety regulations, as well as NHN Safety Rules. The following section entitled, “Safety Rules to Be Observed While Working on NHN Right-of-Way” is included as a representative sample of NHN Safety Rules, but is not considered as a complete presentation of the safety rules. A complete copy of NHN’s Safety Rules is available upon written request.

Contractor work standards must comply with requirements governing General Safety and Health as established by the Occupational Safety and Health Administration (OSHA).

SAFETY RULES TO BE OBSERVED WHILE WORKING ON RIGHT-OF-WAY

(a) **General**

The rules involving the use of narcotics and/or alcohol (3010), attire (3020), hard hats (3060), goggles (3052), and safety toe footwear (3026) are to be strictly enforced. Safety vests (or orange colored shirts) will be required for all personnel working on or adjacent to an active highway. The Contractor is advised that each site must be kept clean and care taken that any on-site material is properly stored and secured from vandals so as to protect our train and yard operations at all times.

(b) **Walking**

3030. You must walk, not run, keeping your hands out of pockets. Be alert for tripping and slipping hazards. Do not jump across excavations, holes or open pits. Walk around them.

3031. Keep all walkways free of any obstruction, tripping or slipping hazard.

(c) **Personal Protective Gear**

3050. Sometimes engineering controls of hazardous exposures are impractical or impossible to implement. In these cases, protective gear is the only recourse to provide a safe and healthful environment for you.

(d) **Hoisting Equipment**

3400. The use of hoists is subject to certain hazards that cannot be met by mechanical means, but only by the exercise of intelligent care, common sense and experience in anticipating the motions that will occur as a result of operational the control. Inspect ropes, chains, hooks and slings before using them.

3401. When positioning and operating equipment, maintain a minimum clearance of ten feet from any wire unless it has been de-energized and visibly grounded at the point of work.

3402. Take hold of cable, sheave, boom or any potential pinch point only after protection has been provided.

3404. Before starting hoisting operation one person shall be designated to give signals and all involved in the operation shall be notified who that person is.

3409. Use a tag line or non-conductive hand line to assist in controlling any unwieldy load. See that all persons are in a safe position, then hoist slowly until the load line is vertical and the load is under complete control.

3422. Operate or move hoisting equipment only when sure that:

(i) no persons are in a position that they are caught by any part of the load or the equipment;

(ii) boom or load will not be carried over any other person:

(iii) boom or load is at least ten feet from energized wires.

(e) **Excavations**

Before excavating, identify all underground utilities and notify those responsible for the utilities.

Keep a safe distance from the edge of a pit or trench, unless constructing, inspecting, maintaining or using it. A competent person will inspect daily the excavation, adjacent areas and protective systems. Keep equipment far enough from the edge of an excavation to avoid imposing strain from vibration on the trench walls.

(f) **Elevated Places**

When working on any elevated place near or over track or highway, keep all objects clear of passing trains or vehicles.

Use an adjusted safety belt and strap in an untwisted position, with tongue or snap away from your body.

2. **PROTECTIVE SERVICES (FLAGGING) PROVIDED BY THE RAILROAD**

The contractor must conduct his work so as not to interfere with the operations of our railroad. The railroad will not issue any slow order restricting the speed of the trains.

With the respect of a flagman, the contractor is advised that the purpose of a railroad flagman is to protect NHN operations from the contractor's activities occurring on this project. It is therefore up to the sole discretion of the railroad representative (Project or Field engineer, or Construction Inspector) when a flagman is necessary.

Generally, one or more flagmen will be required where a track is/or may be fouled by the contractor's equipment and/or personnel. A track is generally considered to be fouled when personnel and/or equipment are within fifteen (15) feet of center of track. (Please note: As an example: A crane with a 100 foot boom operating 80 feet off center line of track is fouling the track – boom failure).

When protective services are ordered, the date, time and type of flagging will be shown in the weekly Bulletin Order. If flagging is to be done by an assigned flagman at the site, construction work will only be allowed while the flagman is at the site. If flagging is to be done by the train crews (i.e. "Stop & Protect") then the contractor will only be permitted to work the hours and days which had been previously agreed to by the railroad representative (unless the contractor is advised otherwise by the railroad representative.)

If an incident should occur involving a train (i.e. a train not receiving the required permission through the site or not following the “Stop & Protect” order) the railroad field representative and/or the NHN office (Area Code 603) 539-2789) should be notified immediately so that the appropriate action can be taken.

3. **CONTRACTOR’S MATERIAL AND EQUIPMENT STORED ON NHN’S RIGHT-OF-WAY**

Generally the contractor will not be allowed to store any equipment or material on NHN’s Right-of-Way. On projects where NHN’s Right-of-Way is wide (100’+) or permission is obtained from our field representative, the following rules will be followed:

Any material stockpiled or stored on or adjacent to our Right-of-Way must be secured at all times and stored far enough way from the tracks (as directed by our field personnel) so as to prevent injury to our personnel or damage to our equipment (material being thrown at trains) or causing a problem with our operations (vandals placing material on the track). This includes material on overhead structures.

Any equipment stored on our Right-of-Way must be parked at least 25 feet off the center of all tracks. This will eliminate any questions by train operators where there is sufficient distance from the track to the vehicle to allow the safe passage of a train.

Please note, under no conditions will a contractor be allowed to store debris from a sandblasting operation on our Right-of-Way.

4. **PROTECTION OF NHN’S FACILITIES DURING CONSTRUCTION**

It is the contractor’s responsibility to ascertain that all NHN facilities are properly protected during construction. Special attention should be given to the following:

C & S Facilities – Before any excavation begins on NHN’s Right-of-Way, the contractor will verify with NHN’s field representatives, the location of all underground C & S (Communication and Signals facilities). The contractor will keep all equipment and material fifteen (15) feet away from all overhead C & S facilities.

Access Roadways – All access roadways in the project area will be maintained (i.e. surface and support) by the contractor for railroad vehicular traffic. The contractor will only be allowed to close a roadway after receiving written authorization from NHN’s Engineering Department. Please note, any prolonged closing of a roadway especially where it parallels a main track, will not be allowed.

Drainage Maintenance – all the existing drainage (including headwalls, culverts, ditches) which is affected by the construction, must be maintained by the contractor.

5. **CLEARANCES FOR TEMPORARY DECK SHIELDS AND TEMPORARY BENTS**

A minimum vertical clearance of 16’-0” above the top of the highest rail will be maintained at all times by the contractor. A temporary reduction of that clearance (16’0”) will only be allowed upon *written* authorization from NHN’s Operations Manager.

Any temporary bents required by the contractor during construction should be located a minimum of 12’0” from the centerline of the nearest tracks. Reduction of the 12’0” clearance to a minimum of 6’0” clearance (close clearance) will be allowed upon *written* authorization of the Operations Manger provided the following conditions are met:

- (a) The contractor accepts, in writing, full responsibility and liability for any and all damages which could result from our train operations (i.e. dragging equipment, derailments, etc.)
- (b) the contractor agrees to reimburse the railroad for its costs in the installation and removal of guard rails.

6. **PROTECTION OF THE TRACK STRUCTURE (BALLAST)**

In order to protect the ballast section from becoming fouled, we suggest measure be taken by the contractor such as covering the track with canvas, etc., to protect the ballast section. This covering must, of course be properly secured and any measure for protection would need to be approved by our field representative prior to installation.

Please note: If the ballast section does become fouled, the existing ballast will be removed and replaced with clean ballast by railroad forces *at the contractor’s expense.*

7. **LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES LOCATED ON NHN'S RIGHT-OF-WAY**

It is the contractor's responsibility to ascertain that all utilities located on and over NHN's Right-of-Way are identified and located in the field and that the utility companies are properly notified *before* any work on our Right-of-Way. Special attention should be given to the possibility of Fiber Optic Cable being located along or across our Right-of-Way.

8. **BLASTING**

Blasting, as a rule, is not allowed on NHN's Right-of-Way. In the event that the contractor has tried all other methods (mechanical, chemical, etc.) and they have proven to be ineffective, an exception to this rule may be considered after all the proper submissions have been made and approved by the Railroad.

9. **TEMPORARY SHEETING AND SHORING**

REQUIREMENTS FOR TEMPORARY SHEETING AND SHORING TO SUPPORT NHN'S TRACKS

The following items are to be included in the design and construction procedure for all permanent and temporary facilities adjacent to NHN's tracks.

- A. Footings for all new piers, columns, walls or other facilities shall be located and designed so that any temporary sheeting and shoring for support of adjacent track or tracks during construction will not be closer than the toe of ballast slope (8'6" is the dimension from the centerline of track to toe of ballast for tangent track; see dimensions on Standard Plan (Area) for dimensions on curved track).
- B. When support of track or tracks is necessary during construction of above mentioned facilities, interlocking steel sheeting adequately braced and designed to carry E-80 live load is required. Soldier piles and lagging will be permitted for supporting adjacent track or tracks *only* when its use is approved by NHN. Consideration for its use will be made if required penetration of steel sheet piling cannot be obtained and when dry, non-running, stable material will be encountered.
- C. Exploratory trenches, three (3) feet deep and fifteen (15) inches wide in the form of an "H" with outside dimensions matching the outside of sheeting dimensions are to be hand dug prior to placing and driving steel sheeting in areas where railroad underground installations are known to exist.

These trenches are for exploratory purposes only and are to be backfilled and the backfill compacted immediately. This work must be done in the presence of a railroad inspector.

- D. Absolute use of track is required while driving sheeting within fifteen (15) feet from the centerline of a live track. Procedure for arranging for use of track shall be as outlined in project special provisions.
- E. Cavities adjacent to sheet piling, created by driving of sheet piling, shall be filled with sand and any disturbed ballast must be restored and tamped immediately.
- F. Sheet piling shall be cut off at top of tie during construction and, after construction and backfilling has been completed, piling within ten (10) feet from centerline of track, or when bottom of excavation is below a line extending at 1:1 slope from end of tie to point of intersection with sheeting, shall be cut of eighteen (18) inches below existing ground line and left in place.
- G. Any excavation adjacent to track shall be covered and ramped and provided with barricades as required by NHN. A walkway must be provided adjacent to track for any excavation within 10 feet off the centerline.
- H. Final backfilling of excavation shall be as required by project specifications.
- I. The contractor is to advise NHN of the time schedule of each operation and obtain approval of NHN for all work to be performed adjacent to NHN tracks so that it may be properly supervised by railroad personnel.
- J. All drawings for temporary sheeting and shoring shall be prepared and stamped by a Registered Professional Engineer and shall be accompanied by complete design computations when submitted for approval.

- K. Where physical conditions of design impose insurmountable restrictions requiring the placing of sheeting closer than specified (see item A) the matter must be submitted to NHN's Operations Manager.
- L. Two (2) copies of the submission are to be sent to:

New Hampshire Northcoast Corporation
P. O. Box 429
Ossipee, NH 03864-0429
- M. One (1) copy of the submission is to be sent or given to our field representative at the time the contractor sends two (2) copies to this office. After review, one (1) copy of the submission will be sent back to the contractor and one (1) copy will be sent to the State.
- N. The contractor is advised that they can expect a minimum of thirty (30) days review period from the date it is received in this office.
- O. NHN field representative must be present at the site during the installation of any sheeting which may have an effect on our operation or facilities.

10. **ERECTION, DEMOLITION AND HOISTING OPERATIONS**

**DATA REQUIRED FOR APPROVAL OF BRIDGE ERECTION
DEMOLITION OR OTHER HOISTING OPERATIONS OVER NHN
TRACKS**

- A. Overhead protective shields are required for the removal of concrete decks, gunite encasement, etc., over active tracks. A minimum vertical clearance of 20'6" must be maintained at all times. Details of the type of shield, method of installation and design loading calculations must be submitted for approval.
- B. A plan showing locations of cranes, horizontally and vertically, operating radii, with delivery or disposal locations shown must be submitted. The location of all tracks and other railroad facilities should also be shown. Please note, any part of the crane, (outriggers, etc.) should be no closer than 10 ft. from the centerline of the track.

- C. Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick, a complete set of crane charts, including crane, counterweight and boom nomenclature is to be submitted.
- D. Plans and computations showing weight of picks. Where beams are being removed over NHN facilities, the weight shall include the weight of concrete of other material that will be included in each pick. Calculations shall be made from plans of the existing and/or proposed structure showing complete and sufficient details with supporting data for demolition or erection of the structure.

If the contractor can prove to NHN that plans do not exist and weights must be calculated from the field measurements, the field measurements are to be made under the supervision of the Professional Engineer submitting the procedure and he shall include sketches and estimated weight calculations with his procedure. If possible, field measurements shall be taken with an NHN representative present. Weights shall include the weight of concrete, or other material that will be included in the lifts.

- E. A location plan showing all obstructions such as wires, poles, adjacent structures, etc., showing that the proposed lifts are clear of these obstructions.
- F. A data sheet shall be prepared listing the type, size and arrangements of slings, shackles, or other connecting equipment. Include copies of catalog or information sheets for specialized equipment.
- G. A complete procedure is to be included, indicating the order of lifts and any repositioning or rehitching of the crane or cranes.
- H. Temporary support of any components or intermediate stages is to be shown and detailed. If this temporary support is located within twelve (12) feet of any track, a guard rail will be installed in any track(s) by railroad forces at the contractor's expense.
- I. A time schedule of the various stages must be shown as well as a schedule for the entire lifting procedure.
- J. All bridge erection or demolition procedures submitted will be prepared, signed and sealed by a Registered Professional Engineer.

K. Two (2) copies of the procedures are to be sent to:

New Hampshire Northcoast
P. O. Box 429
Ossipee, NH 03864-0429

- L. One (1) copy of the procedure is to be sent or given to our field representative at the time the contractor sends two (2) copies to the NHN office. After review, one (1) copy of the submission will be sent back to the contractor and one (1) copy will be sent to the State.
- M. The contractor is advised that they can expect a minimum thirty (30) day review period starting the day the submission is received in the NHN office.
- N. NHN's field representative must be present at the site during the entire demolition and erection procedure period.
- O. Plans are to be prepared in sizes as small as practical and shall be folded, individually, the applicant to an 8 ½ inches by 11 inches size prior to submission. Where more than one plan is involved, the folded plans shall be assembled into complete sets by the applicant before submission. Failure of the applicant to comply with these requirements may be sufficient cause for rejection of the application.

11. **SUBMISSIONS**

Please note that a minimum thirty (day review period can be expected from the date the submission is received in this office.

12. **PRIVATE GRADE CROSSING FOR A CONTRACTOR**

The railroad will review any request for a private grade crossing, however, it should be understood that the railroad is the sole judge if a crossing will be installed.

If the concept of a crossing approved, then a contract with the railroad will be necessary. A request, including a drawing showing the location of the crossing (a North arrow, and the distance from the nearest milepost) should be sent to:

New Hampshire Northcoast
P. O. Box 429
Ossipee, NH 03864-0429

As information, rates for private grade crossings are as follows:

<u>Preparation</u>	\$300	
<u>Annual Rental</u>	<u>Width of Crossing</u>	<u>Amount</u>
	8'	\$2,400
	10'	\$3,000
	24'	\$3,600
	32'	\$4,200
	40'	\$4,800
	48'	\$5,600
	56'	\$6,200

13. **INSURANCE REQUIREMENTS**

In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, the contractor will be required to carry the insurance of the following kinds and amounts:

1. Commercial General Liability with no exclusion for explosion, collapse and underground damage (xcu) and including Contractual Liability. Coverage should be primary with no contribution from insurance carried by New Hampshire Northcoast or Boston Sand & Gravel. Policy must include New Hampshire Northcoast and Boston Sand & Gravel Company and its subsidiaries as additional insureds with respect to the operations of the named insured.

Combined Single Limit for Bodily Injury and Property Damage
\$1,000,000 Each Occurrence
\$2,000,000 General Aggregate
\$1,000,000 Personal and Advertising Injury
\$2,000,000 Products and Completed Operations Aggregate

2. Automobile Liability (owned, non-owned and hired)
\$1,000,000 Each Occurrence
3. Workers Compensation Insurance including Waiver of Subrogation
Statutory Benefits-State of Hire
Employers Liability
\$500,000 Each Person for Injury by Disease
\$500,000 Policy Limit for Injury by Disease
\$500,000 Each Person for Injury by Accident

4. Umbrella Excess Liability
\$5,000,000 Annual Aggregate
5. Railroad Protective Liability
\$2,000,000 Each Occurrence
\$6,000,000 Aggregate

Coverage must be written with carriers rated as A X or better by Best's Rating Service or equivalent.

The insurance hereinbefore specified shall be carried until all work required to be performed under the terms of the contract is satisfactorily completed and formally accepted. Failure to carry or keep such insurance in force until all work is satisfactorily completed shall constitute a violation of the contract.

The contractor shall furnish to New Hampshire Northcoast Corporation a signed copy of the policy for Contractor's Public Liability Insurance and the original of the AAR-AASHTO policy for Railroad's Protective Public Liability Insurance. If any work is subcontracted, the contractor shall furnish a signed copy of the policy for Contractor's Protective Public Liability Insurance.

Insurance Information should be sent to:

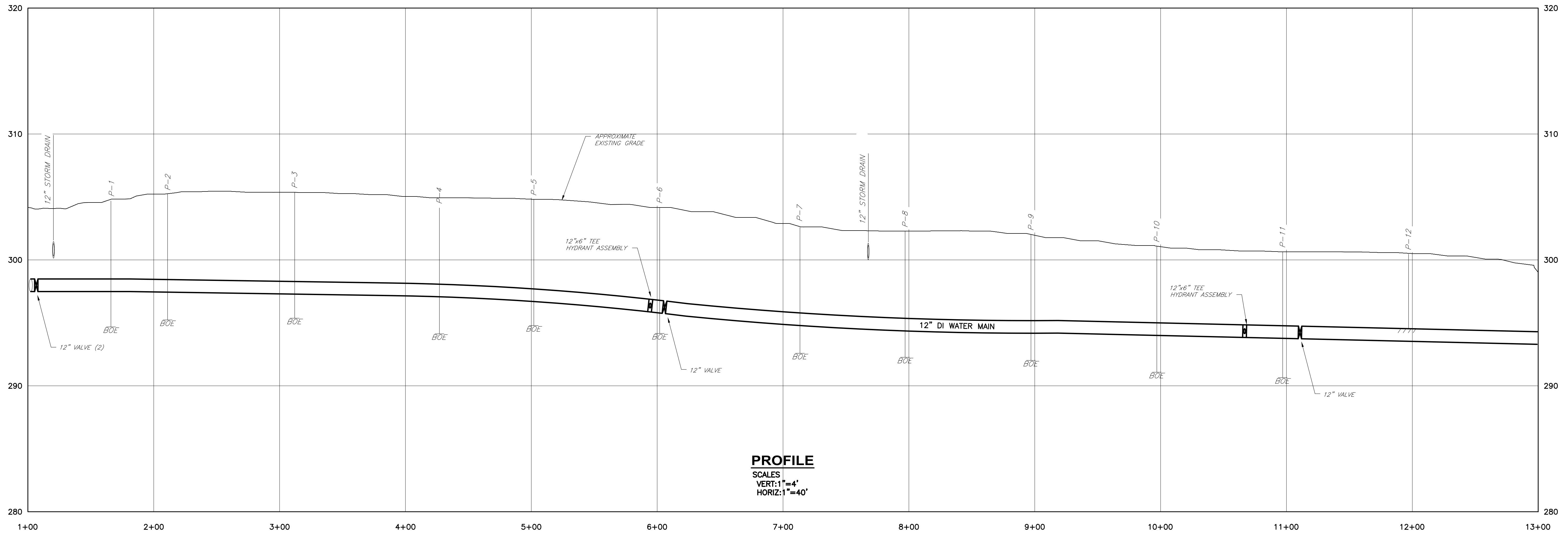
New Hampshire Northcoast Corporation
P.O. Box 429
Ossipee, NH 03864-0429

Telephone number: (603) 539-2789

Fax number: (603) 539-8060



PLAN
SCALE: 1"=40'



PROFILE
SCALES
VERT: 1"=4'
HORIZ: 1"=40'

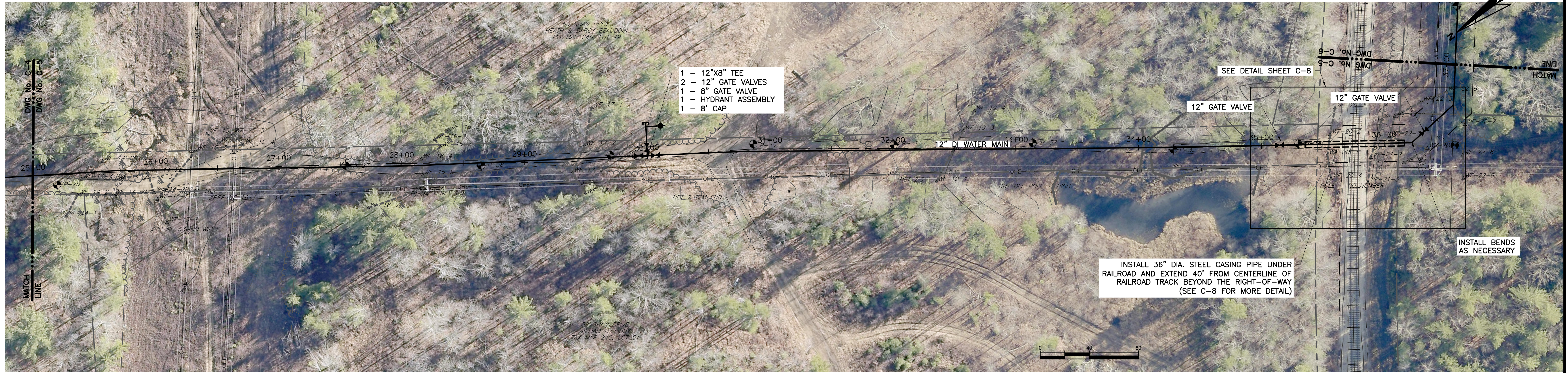
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CHECKED BY: C.B.E.R.	APPENDIX NO. 1		
DATE: 9-17			
APPROVED BY: C.B.E.R.			
DATE: 9-18			
PROJECT NO: 14113A			

DESIGNED BY: W.EDG	ISSUED FOR: BID	NO.	DATE
CAD: W.EDG	C.B.E.R. 6-18		
CHECKED BY: C.B.E.R.	APPENDIX NO. 1		
DATE: 9-17			
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DATE: 9-18			
PROJECT NO: 14113A			

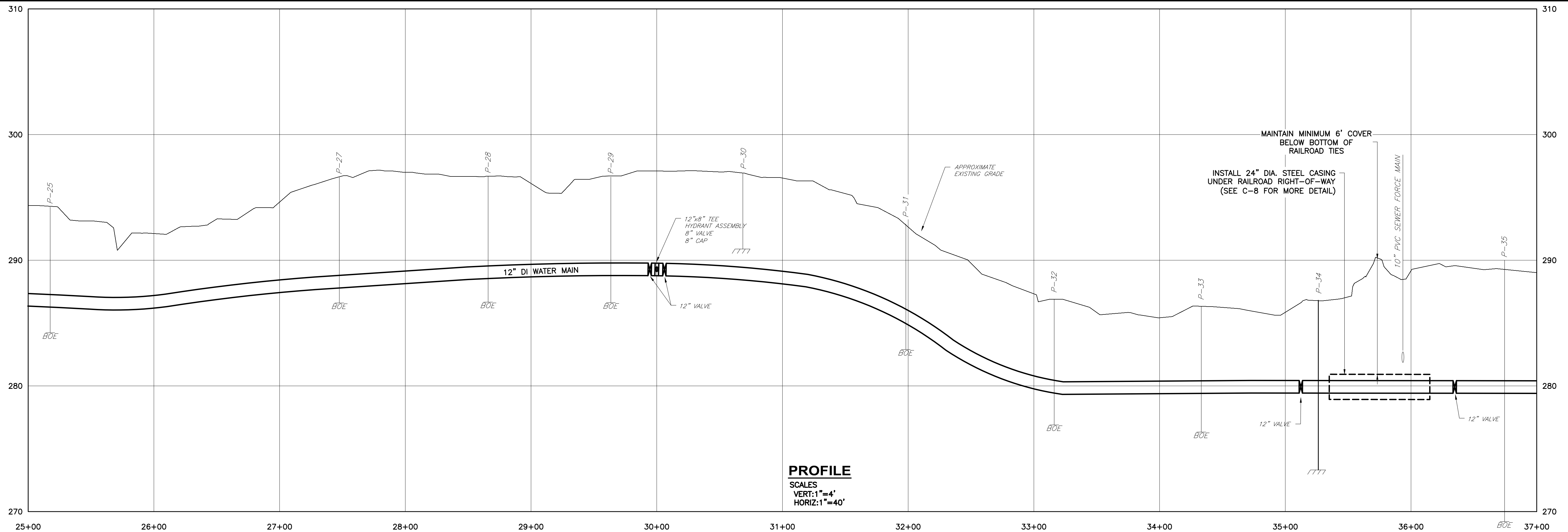
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CHECKED BY: C.B.E.R.	APPENDIX NO. 1		
DATE: 9-17			
APPROVED BY: C.B.E.R.			
DATE: 9-18			
PROJECT NO: 14113A			

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CITY OF ROCHESTER
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GRANITE STATE BUSINESS PARK
WATER MAIN EXTENSION
PLAN AND PROFILE I
STA. 1+00 TO STA. 13+00
DRAWING
C-3



PLAN
SCALE: 1"=40'



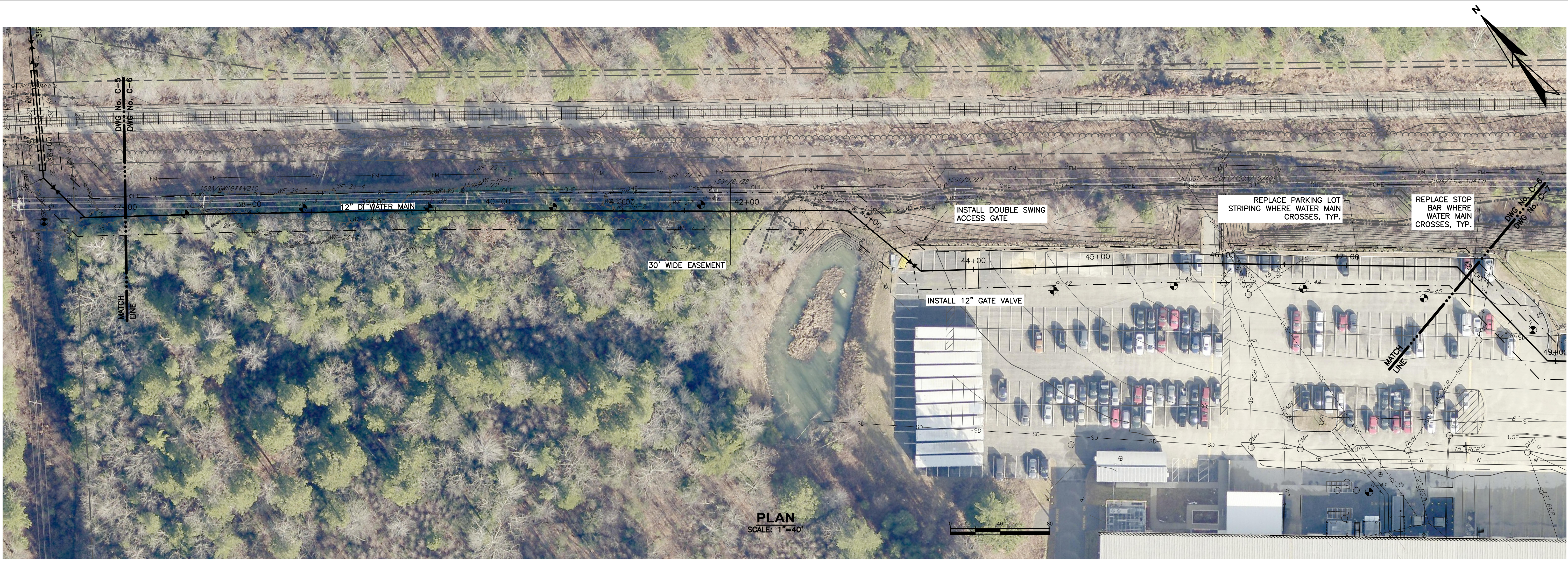
PROFILE
SCALES
VERT: 1"=4'
HORIZ: 1"=40'

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2	ADDENDUM NO. 1	C.BER 7-10

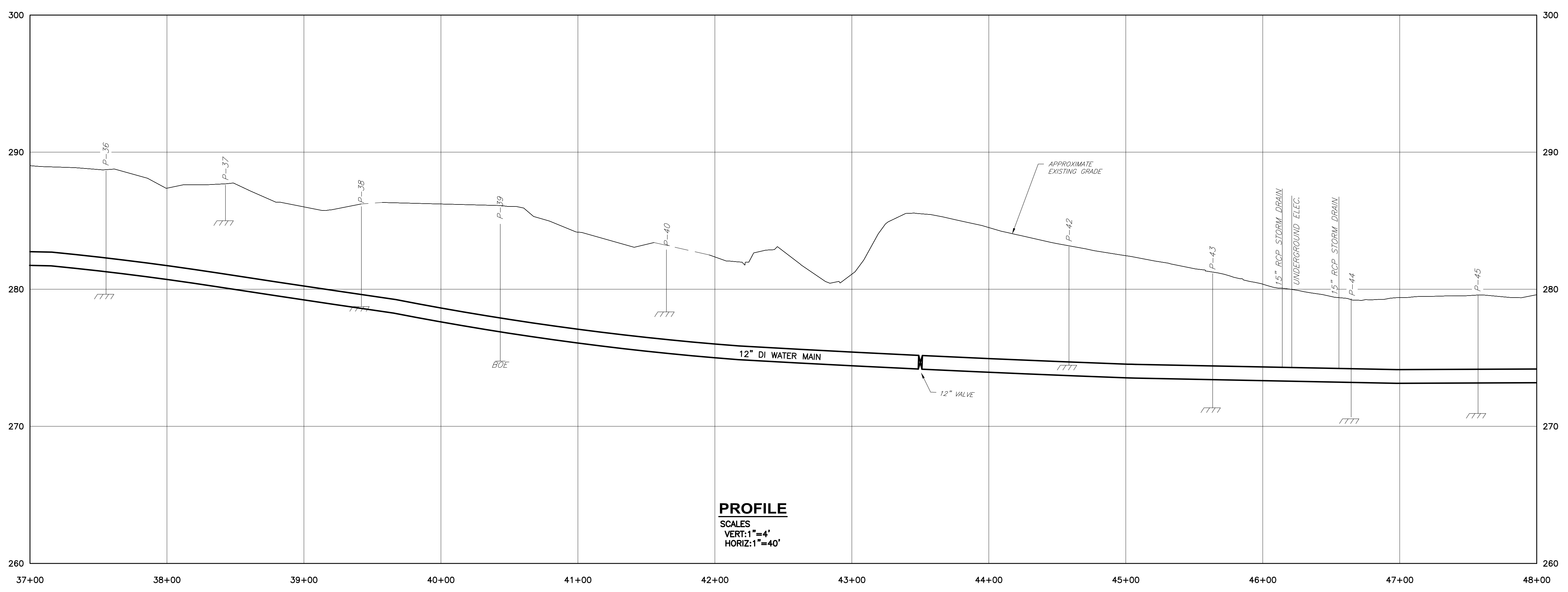
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CAD CHECKED	W.EDG
CHECKED BY	C.BER
DATE	9-17-17
APPROVED BY	C.BER
DATE	9-18-17
PROJECT NO.	14113A

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WATER MAIN EXTENSION
PLAN AND PROFILE III
STA. 25+00 TO STA. 37+00



PLAN
SCALE: 1"=40'



PROFILE
SCALES
VERT: 1"=4'
HORIZ: 1"=40'

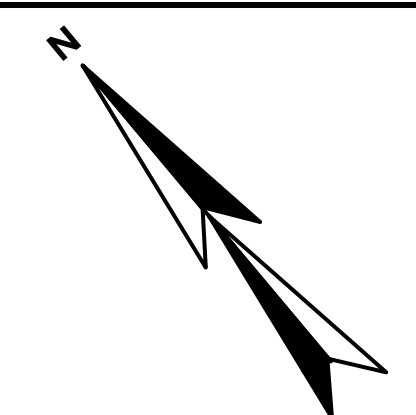
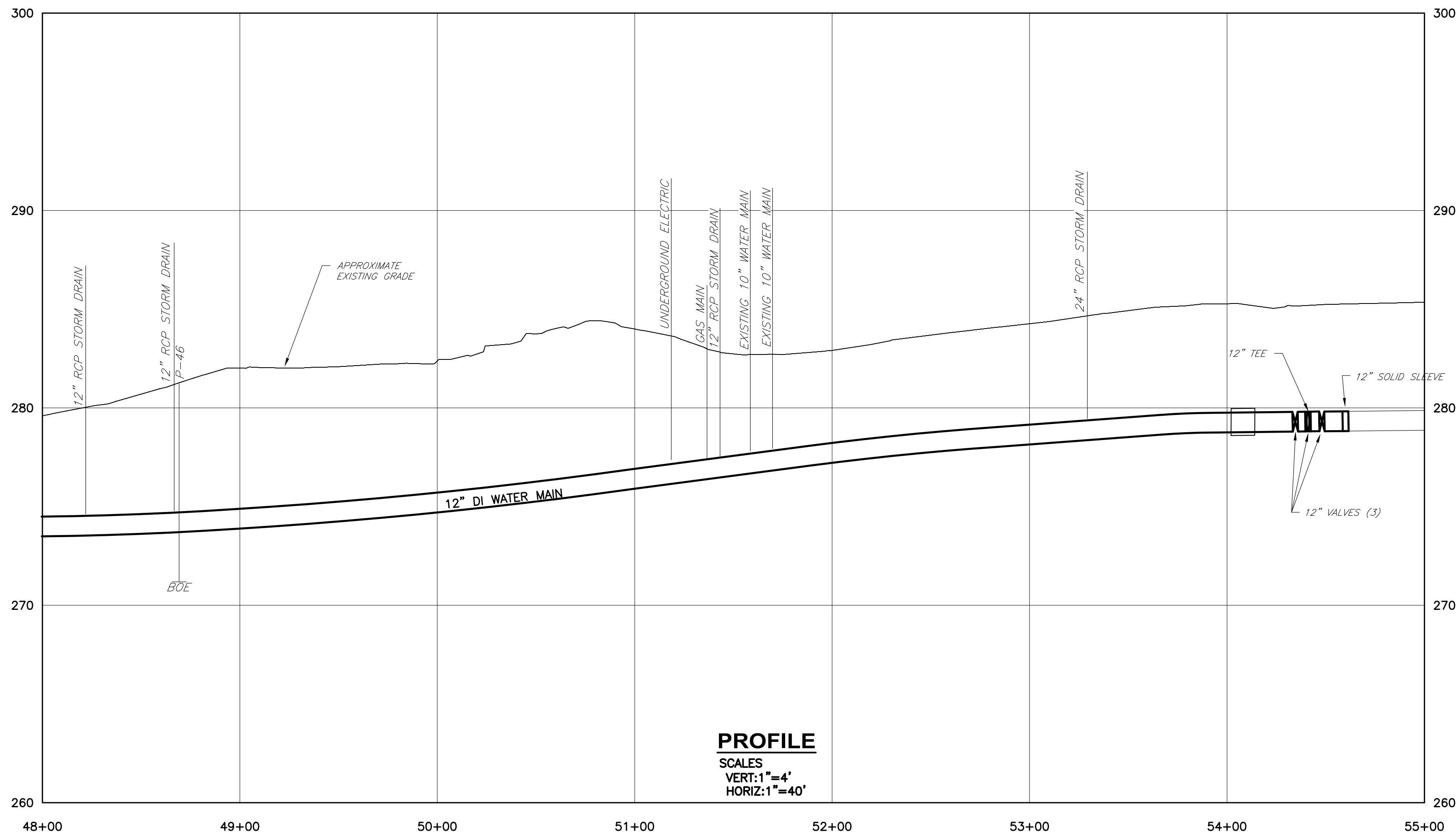
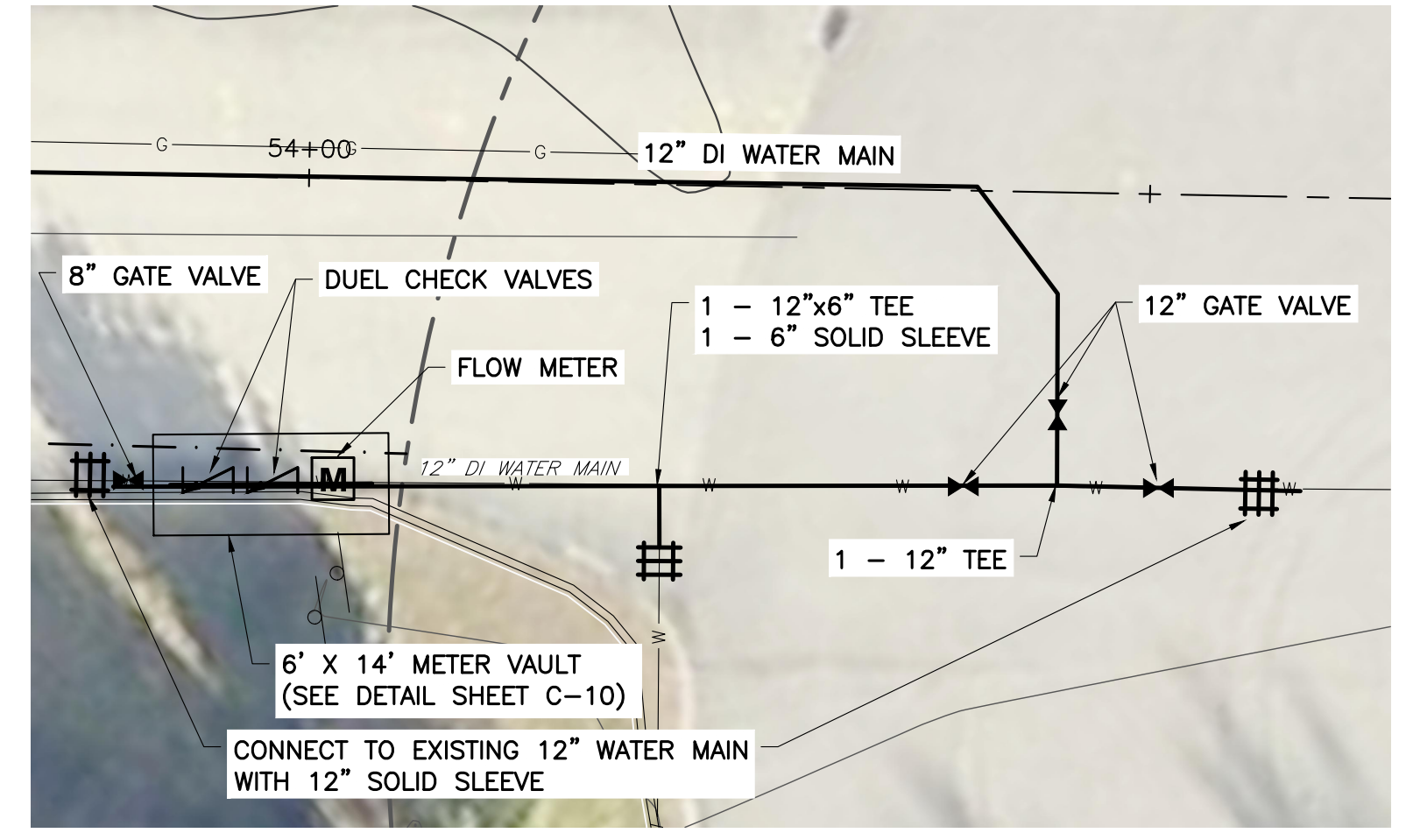
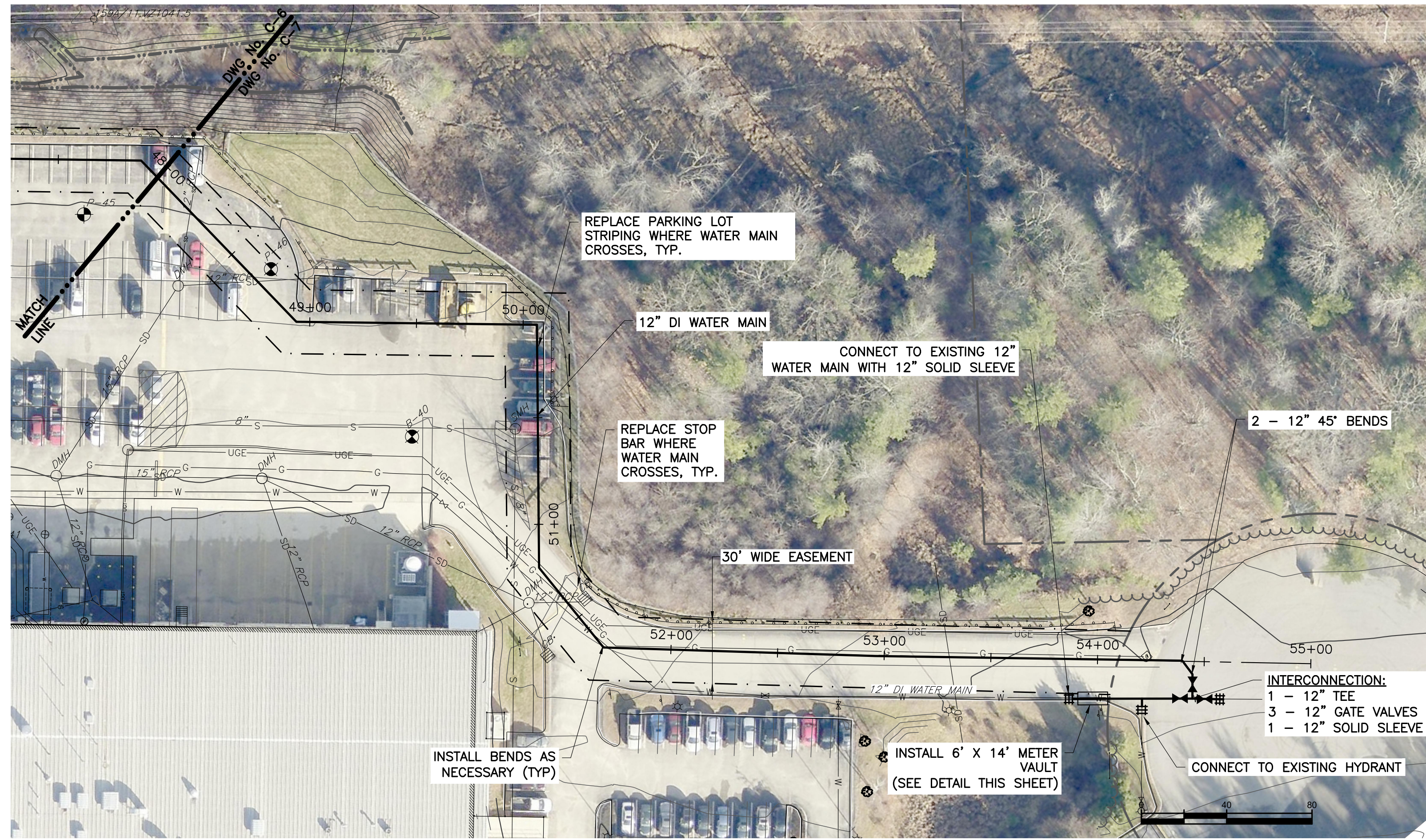
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	FOR BID	6-18
	ADDENDUM NO. 1	7-10

DESIGNED BY: WJEDG	CHECKED BY: CBER	DATE: 6-17
CAD: WJEDG	APPROVED BY: CBER	DATE: 6-18
PROJECT NO: 14113A		

NO.	ISSUED FOR	DATE
	FOR BID	6-18
	ADDENDUM NO. 1	7-10

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WATER MAIN EXTENSION
PLAN AND PROFILE IV
STA. 37+00 TO 49+50



NO.	ISSUED FOR	DATE
1	ISSUED FOR BID	C.BER 6-18
2	ADDENDUM NO. 1	C.BER 7-10

DESIGNED BY	W.EDG
CAD. CHECKED	W.EDG
CHECKED BY	C.BER
DATE	9-17-17
APPROVED BY	C.BER
DATE	9-18-17
PROJECT NO.	14113A

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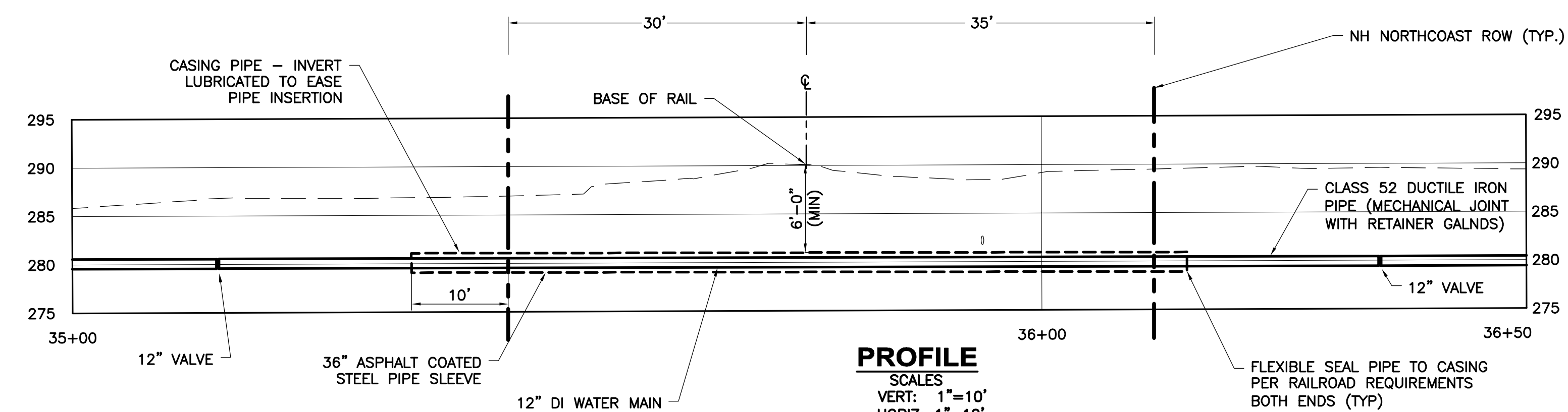
CITY OF ROCHESTER
ROCHESTER, NEW HAMPSHIRE
GRANITE STATE BUSINESS PARK
WATER MAIN EXTENSION

PLAN & PROFILE V
STA. 48+00 TO STA. 53+00

DRAWING
C-7

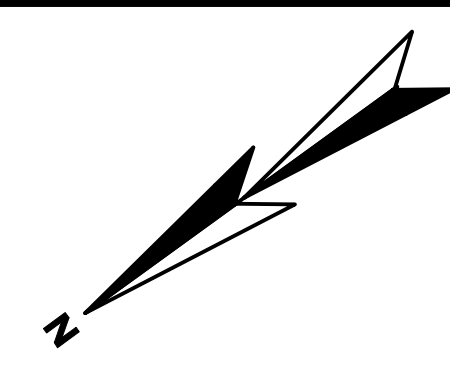


PLAN
SCALE: 1"=10'



PROFILE
SCALES
VERT: 1"=10'
HORIZ: 1"=10'

- NOTES:
- CASING SHALL MEET RAILROAD E80 LIVE LOADS AS OUTLINED IN SPECIFICATION 02855.
 - JACKING PIT DIMENSIONS AS REQUIRED BY CONTRACTOR.
 - WATER MAIN FROM STA. 35+15 TO STA. 36+35 SHALL BE RESTRAINED JOINT DUCTILE IRON PIPE.



NO.	ISSUED FOR	ISSUED FOR	DATE
1	ISSUED FOR BID	ISSUED FOR BID	C.BER 6-18
2	ISSUED FOR BID	ISSUED FOR BID	G.BER 7-10
3			
4			
5			
6			
7			
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10			

DESIGNED BY: W.EDG	DESIGNED BY: W.EDG
CAD COORD: W.EDG	CAD COORD: W.EDG
CHECKED BY: C.BER	CHECKED BY: C.BER
DATE: 6-17	DATE: 6-17
APPROVED BY: C.BER	APPROVED BY: C.BER
DATE: 6-18	DATE: 6-18
PROJECT NO: 14113A	PROJECT NO: 14113A

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RAILROAD CROSSING PLAN