MAINE TURNPIKE AUTHORITY

ADDENDUM NO. 1

CONTRACT 2019.13

EXIT 45 – EMBANKMENT PRELOAD
MILE 44.9

The bid opening date is Tuesday August 27, 2019 at 11:00 am.

The following changes are made to the Proposal, Specifications and Plans.

GENERAL

All questions regarding Contract 2019.13 should be submitted by the 3:00 pm on Wednesday August 21, 2019 to be answered in the last addendum to be issued on Friday August 23, 2019, if necessary. Questions received after that time may not be answered.

PROPOSAL

Proposal Sheets P-2 through P-9 shall be deleted and replaced with revised sheets attached hereto.

SPECIFICATIONS

- Page SP-13, Section 107.6 shall be deleted and replaced with: This Contract will include Completion Incentives of $5,000 per Calendar Day ahead of Substantial Completion, up to a maximum of 15 days. The Contract will also include Completion Disincentive of $5,000 per Calendar Day for each day beyond Substantial Completion. There are no delays for weather or any other potential interruption to time. The "day" begins at 12:01 a.m. and ends at 12:00 a.m. (midnight).
- Page SP-13, Section 107.8 the bottom row of the table ("Two Stage Embankments Complete (Substantial Completion)") shall be deleted.
- Page SP-91, Section 652.1, the last sentence of the first paragraph shall be deleted and replaced with: Drums shall also include two NCHRP approved tire sidewall ballasts.
- Page SP-102, Section 652.7: The following work activity is added to the allowable work activities for using flaggers: As spotters to determine safe egress of construction vehicles from the site. Flaggers are for construction vehicles only and shall not stop ramp traffic.
- Page SP-102, Section 652.7: Last paragraph shall be deleted and replaced with: All other uses of Flaggers will not be measured for payment but shall be incidental to the Maintenance of Traffic Control Devices item, unless otherwise approved by the Resident Engineer.
- Appendix B – Portland Water District Specifications is added at the end of the Special Provisions.

PLANS

- Plan Sheet EQ-01 (3 of 173) is deleted and replaced with the attached.
- Plan Sheet MT-05 (14 of 173) is deleted and replaced with the attached.
- Plant Sheet MT-22 (31 of 173) is deleted and replaced with the attached.
- Plan Sheets MT-39 (48 of 150) are deleted and replaced with the attached.
- Portland Water District Water Main Replacement Plans are added to the back of the plan set.

QUESTIONS

The following are questions asked at the pre-bid meeting held on August 6, 2019 or submitted to the Maine Turnpike Authority in writing. Answers to the questions are noted. Bidders shall utilize this information in preparing their bid.

Question 1: Do only State of Maine wage rates apply?

Answer: Yes.

Question 2: Are there any FAA height requirements that apply to this project?

Answer: It will depend on the height of the Contractor's equipment being used on site. The Contractor shall be responsible for reviewing the Code of Federal Regulations (CFR) Part 77 and determine if a notification to the FAA is required. If required the Contractor shall be responsible for making the notification.

Question 3: Is settlement noted in the geotechnical reports and what additional embankment material is incidental?

Answer: Special Provision 203, Section 203.18 – Method of Measurement provides the method of payment for embankment material placed during initial construction of the embankment. As clarification, once the design grade is reached for each stage of preload embankment construction, readings of the settlement platforms will be taken. Adjustments to the stage embankment material quantities will then be made and paid for following the procedures noted in Special Provision 203, Section 203.18. Additionally, the cross sections indicate the anticipated settlement of the first stage of embankment construction (including both settlement from initial embankment construction and settlement during the waiting period) and the quantities are reflected in the stage 2 embankment material quantities. The stage 1 embankments will need to be sectioned after notice to proceed to construct the second stage embankments is provided so that adjustments may be made to account for the actual stage 2 embankment material placed.

Question 4: What is the procedure to load the embankments?

Answer: Note 3 on Plan Sheet GT-01 (63 of 173) provides criteria for portions of embankment that must be constructed together and the allowable variance of height within the embankment. Additionally, the elevation limits shown on the plans for each preload stage are the principal controls for maximum embankment height. As noted in Earthwork General Note #9 (Plan Sheet GN-01, 6 of 173), embankments shall be raised in uniform lifts not exceeding 2 feet in height.

Question 5: What are the parameters for the inclinometer readings, i.e. at what reading level will work be stopped? If work is stopped is there a typical duration that can be expected for things to normalize? This will be beneficial in determining how to decide what additional time may be needed to be added to the contract due to a work stoppage?

Answer: The threshold movement criteria for inclinometers will vary according to the specific stratigraphy and embankment geometry at each location. Generally, a lateral movement in the range of 0.3 inches will trigger an alert to increase the monitoring frequency and to also determine if a shutdown is warranted. If shutdown occurs, the required time of non-activity will be decided on a case by case basis, but a typical period would be two weeks. In the event that work is required to stop on an embankment and the crew for that embankment is not able to work elsewhere on the project site, the Authority will consider granting additional time to the contract or interim dates.

Question 6: Looking at the plans, there are very few locations outside of the embankment locations where stock piles will be allowed. I believe there is a plan note that says not to exceed 5 ft of differential, but is there any flexibility in stockpiling height, or number of trucks that can be dumped before spreading the material?

Answer: In accordance with the General Notes, temporary stockpiles created off the embankments require advance approval of the Resident and shall be designed and maintained by the Contractor. The height of such stockpiles shall not exceed 8 feet unless it can be shown by the Contractor that greater heights are stable. Temporary stockpiles dumped on the embankment awaiting spreading and placement shall follow the 5 foot maximum differential fill height rule for simultaneous build as provided in the contract documents. However, in no case shall temporary stockpiles be placed higher than the elevation limits shown on the plans for each preload stage.

Question 7: Do Disincentives apply to the interim completion dates?

Answer: No, disincentives do not apply to interim completion dates. Additionally, see change made to Specification page SP-13. However, Supplemental Liquidated Damages per Special Provision 107.8.8 will be applied to Interim Milestone Dates.

ATTACHMENTS

- Addendum No. 2 (4 pages)
- Revised Proposal Sheets (12 pages)
- Special Provision Sheets (Including PWD) (65 pages)
- Pre-Bid Agenda (5 pages)
- Pre-Bid Sign-In Sheet (1 page)
- Revised Plan Sheets (4 pages)
- PWD Plan Sheets (8 pages)

Notes: The above items shall be considered as part of the bid submittal.

The total number of pages included with this addendum is Ninety-Nine pages (99).

All bidders are requested to acknowledge the receipt of the Addendum No. 1 by signing below and faxing this sheet to Nathaniel Carll, Purchasing Department, Maine Turnpike Authority at 207-871-7739. Bidders are also required to acknowledge receipt of this Addendum No. 1 on Page P-7 of the bid package.

_____
Business Name

_____
Print Name and Title

_____
Signature

_____
Date
August 14, 2019

Very truly yours,

MAINE TURNPIKE AUTHORITY

_____
Nathaniel Carll
Purchasing Department
Maine Turnpike Authority

SCHEDULE OF BID PRICES
CONTRACT NO. 2019.13
Exit 45
EMBANKMENT PRELOAD
MILE 44.9

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
201.11	CLEARING	Acre	3				
202.15	REMOVING EXISTING MANHOLE OR CATCH BASIN	Each	2				
202.202	REMOVING PAVEMENT SURFACE	Square Yard	960				
203.20	COMMON EXCAVATION	Cubic Yard	33,400				
203.24	COMMON BORROW	Cubic Yard	133,000				
203.25	GRANULAR BORROW	Cubic Yard	472				
209.29	PREFABRICATED VERTICAL DRAINS	Linear Foot	2,343,000				
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	Cubic Yard	173,600				
304.14	AGGREGATE BASE COURSE - TYPE A	Cubic Yard	151				
403.207	HOT MIX ASPHALT, 19.0 mm NOMINAL MAXIMUM SIZE	Ton	380				
403.208	HOT MIX ASPHALT, 12.5 mm NOMINAL MAXIMUM SIZE	Ton	605				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
403.209	HOT MIX ASPHALT, 9.5 mm NOMINAL MAXIMUM SIZE	Ton	55				
403.212	HOT MIX ASPHALT, 4.75 mm NOMINAL MAXIMUM SIZE	Ton	1,350				
403.213	HOT MIX ASPHALT, 12.5 mm NOMINAL MAXIMUM SIZE (BASE AND INTERMEDIATE BASE COURSE)	Ton	815				
409.15	BITUMINOUS TACK COAT RS-1 OR RS-1H - APPLIED	Gallon	320				
419.30	SAWING BITUMINOUS PAVEMENT	Linear Foot	620				
526.306	TEMPORARY CONCRETE BARRIER, TYPE I - SUPPLIED BY AUTHORITY (3,000 LF)	Lump Sum	1				
527.341	WORK ZONE CRASH CUSHIONS - TL-3	Unit	1				
527.3411	WORK ZONE CRASH CUSHIONS - TL-3 LEFT IN PLACE	Unit	1				
527.3421	WORK ZONE CRASH CUSHIONS - TL-2 LEFT IN PLACE	Unit	5				
602.30	FLOWABLE CONCRETE FILL	Cubic Yard	2				
603.155	12 INCH REINFORCED CONCRETE PIPE - CLASS III	Linear Foot	56				
603.159	12 INCH CULVERT PIPE OPTION III	Linear Foot	72				
			CARRIED FORWARD:				

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
603.169	15 INCH CULVERT PIPE OPTION III	Linear Foot	99				
603.175	18 INCH REINFORCED CONCRETE PIPE - CLASS III	Linear Foot	36				
603.195	24 INCH REINFORCED CONCRETE PIPE - CLASS III	Linear Foot	480				
603.205	30 INCH REINFORCED CONCRETE PIPE - CLASS III	Linear Foot	780				
603.215	36 INCH REINFORCED CONCRETE PIPE - CLASS III	Linear Foot	76				
603.2153	42 INCH REINFORCED CONCRETE PIPE - CLASS V	Linear Foot	40				
603.255	60 INCH REINFORCED CONCRETE PIPE - CLASS III	Linear Foot	180				
603.28	CONCRETE COLLAR	Each	2				
603.281	CONCRETE COLLAR FOR WATER MAIN	Each	1				
604.09	CATCH BASIN TYPE B1	Each	4				
604.093	60" CATCH BASIN TYPE B1	Each	2				
604.244	CATCH BASIN TYPE F4	Each	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
606.1724	BRIDGE TRANSITION - TYPE II - MODIFIED	Each	1				
606.278	TERMINAL END - ANCHORED END	Each	1				
606.352	REFLECTORIZED BEAM GUARDRAIL DELINEATOR	Each	280				
606.356	UNDERDRAIN DELINEATOR POST	Each	24				
606.3562	DELINEATOR POST - REMOVE AND STACK	Each	60				
606.3606	GUARDRAIL - REMOVE, MODIFY, AND RESET DOUBLE RAIL	Linear Foot	25				
607.09	WOVEN WIRE FENCE - METAL POSTS	Linear Foot	650				
607.17	CHAIN LINK FENCE – 6 FOOT	Linear Foot	1,200				
607.23	CHAIN LINK FENCE GATE	Each	1				
607.32	BRACING ASSEMBLY TYPE I - METAL POSTS	Each	8				
607.33	BRACING ASSEMBLY TYPE II - METAL POSTS	Each	3				
609.21	6 INCH CONCRETE SLIPFORM CURB	Linear Foot	65				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
609.31	CURB TYPE 3	Linear Foot	18				
610.08	PLAIN RIPRAP	Cubic Yard	170				
610.18	STONE DITCH PROTECTION	Cubic Yard	45				
610.181	TEMPORARY STONE CHECK DAM	Cubic Yard	45				
613.319	EROSION CONTROL BLANKET	Square Yard	7,350				
615.07	LOAM	Cubic Yard	5,200				
618.14	SEEDING METHOD NUMBER 2	Unit	420				
619.1201	MULCH - PLAN QUANTITY	Unit	420				
619.1202	TEMPORARY MULCH	Lump Sum	1				
620.58	EROSION CONTROL GEOTEXTILE	Square Yard	570				
626.121	QUAZITE JUNCTION BOX (36X24)	Each	5				
626.122	QUAZITE JUNCTION BOX (18X11)	Each	6				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
626.131	ADJUST EXISTING JUNCTION BOX TO GRADE	Each	10				
626.22	NON-METALLIC CONDUIT	Linear Foot	100				
627.77	REMOVING EXISTING PAVEMENT MARKING	Square Foot	5,350				
627.78	TEMPORARY PAVEMENT MARKING LINE, WHITE OR YELLOW	Linear Foot	15,300				
627.812	TEMPORARY RAISED PAVEMENT MARKERS	Each	1,400				
629.05	HAND LABOR, STRAIGHT TIME	Hour	40				
631.12	ALL PURPOSED EXCAVATOR (INCLUDING OPERATOR)	Hour	60				
631.172	TRUCK - LARGE (INCLUDING OPERATOR)	Hour	60				
631.22	FRONT END LOADER (INCLUDING OPERATOR)	Hour	60				
631.32	CULVERT CLEANER (INCLUDING OPERATORS)	Hour	20				
631.36	FOREMAN	Hour	60				
634.2083	REMOVE AND STACK LIGHT STANDARD	Each	4				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
634.221	TEMPORARY HIGHWAY LIGHT	Each	4				
639.18	FIELD OFFICE, TYPE A	Each	1				
639.26	INSTRUMENTATION (GEOTECHNICAL)	Lump Sum	1				
645.105	REMOVE AND STACK SIGN	Each	4				
652.30	FLASHING ARROW	Each	3				
652.312	TYPE III BARRICADES	Each	10				
652.33	DRUM	Each	560				
652.332	DRUM LEFT IN PLACE	Each	170				
652.34	CONE	Each	50				
652.35	CONSTRUCTION SIGNS	Square Foot	1,850				
652.351	CONSTRUCTION SIGNS LEFT IN PLACE	Square Foot	530				
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES	Lump Sum	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
652.38	FLAGGERS	Hour	2,600				
652.41	PORTABLE-CHANGEABLE MESSAGE SIGN	Each	8				
652.45	TRUCK MOUNTED ATTENUATOR	Calendar Day	20				
652.4501	TRUCK MOUNTED ATTENUATOR - 24,000 LB	Calendar Day	30				
652.451	AUTOMATED TRAILER MOUNTED SPEED LIMIT SIGN	Calendar Day	20				
656.50	BALED HAY, IN PLACE	Each	100				
656.60	TEMPORARY BERMS	Linear Foot	1,800				
656.62	TEMPORARY SLOPE DRAINS	Linear Foot	210				
656.632	30 INCH TEMPORARY SILT FENCE	Linear Foot	17,400				
659.10	MOBILIZATION	Lump Sum	1				
802.321	CASING SPACERS - 24" HDPE	Each	62				
802.322	CASING SPACERS - 36" HDPE	Each	52				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
822.3715	16" CLASS 52 DI PIPE PUSH ON JOINT	Linear Foot	10				
822.3734	16" CONCRETE TO DUCTILE IRON ADAPTOR	Each	1				
822.3755	20" CLASS 52 DI PIPE PUSH ON JOINT	Linear Foot	780				
822.3758	24" DR 11 HDPE PIPE	Linear Foot	880				
822.3765	30" CLASS 52 DI PIPE PUSH ON JOINT	Linear Foot	480				
822.3768	36" DR 11 HDPE PIPE	Linear Foot	760				
823.3402	2" BLOW OFF VALVE ASSEMBLY	Each	1				
823.3411	1" AIR RELEASE VALVE	Each	2				
823.3412	1 -1/2" AIR RELEASE VALVE	Each	1				
823.3841	20" HORIZONTAL GATE VALVE	Each	2				
825.431	1-1/2" COPPER SERVICE	Linear Foot	30				
827.303	UNSUITABLE MATERIAL BELOW TRENCH GRADE	Cubic Yard	400				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
BROUGHT FORWARD:							
TOTAL:							

Acknowledgment is hereby made of the following Addenda received since issuance of the Plans and Specifications: _____

_____

_____

Accompanying this Proposal is an original bid bond, cashiers or certified check on _____ Bank, for _____, payable to the Maine Turnpike Authority. In case this Proposal shall be accepted by the Maine Turnpike Authority and the undersigned should fail to execute a Contract with, and furnish the security required by the Maine Turnpike Authority as set forth in the Specifications, within the time fixed therein, an amount of money equal to Five (5%) Percent of the Total Amount of the Proposal for the Contract awarded to the undersigned, but not less than $500.00, obtained out of the original bid bond, cashier's or certified check, shall become the property of the Maine Turnpike Authority; otherwise the check will be returned to the undersigned.

The performance of said Work under this Contract will be completed during the time specified in Subsection 107.1.

It is agreed that time is of the essence of this Contract and that I (we) will, in the event of my (our) failure to complete the Work within the time limit named above, pay to Maine Turnpike Authority liquidated damages in the amount or amounts stated in the Specifications.

The undersigned is an Individual/Partnership/Corporation under the laws of the State of _____, having principal office at _____, thereunto duly authorized.

_____ *(SEAL)*

_____ *(SEAL)*

Affix Corporate Seal
or Power of Attorney
Where Applicable

_____ *(SEAL)*

By: _____

Its: _____

Information below to be typed or printed where applicable:

INDIVIDUAL:

(Name)	(Address)

PARTNERSHIP - Name and Address of General Partners:

(Name)	(Address)
(Name)	(Address)
(Name)	(Address)
(Name)	(Address)

INCORPORATED COMPANY:

(President)	(Address)
(Vice-President)	(Address)
(Secretary)	(Address)
(Treasurer)	(Address)

- The Contractor shall secure all catch basin grates with Sikaflex 1a before being allowed to shift traffic onto the shoulder. This work will be incidental to Item 652.361.

- Temporary lane shifts, lane closures, and shoulder closures along the Maine Turnpike shall only be used during periods of activity.

- The Exit 45 southbound off ramp will have a wide load restriction of 12 ft for the duration of this project.

107.6 Completion Incentives and Disincentives

This Contract will include Completion Incentives of $5,000 per Calendar Day ahead of Substantial Completion, up to a maximum of 15 days. The Contract will also include Completion Disincentive of $5,000 per Calendar Day for each day beyond Substantial Completion. There are no delays for weather or any other potential interruption to time. The "day" begins at 12:01 a.m. and ends at 12:00 a.m. (midnight).

107.8 Supplemental Liquidated Damages

This Subsection is amended by the addition of the following:

Interim Milestone	Supplemental Liquidated Damages Date	Supplemental Liquidated Damages Per Calendar Day
1st Stage of Two Stage Embankments Complete*	March 31, 2020	$5,000
All Single Stage Embankments Complete	June 30, 2020	$5,000

*Refer to plan sheets GT-01 and GT-02 for locations of two stage embankments

The "day" begins at 12:01 a.m. and ends at 12:00 a.m. (midnight).

SPECIAL PROVISION

SECTION 652

MAINTENANCE OF TRAFFIC

(Drum Left in Place)
(Construction Signs Left in Place)

652.1 Description

The following paragraphs are added:

The Contractor shall furnish new Drums with "MTA" painted on the drum for all drums designated on the plans as Left in Place. The Contractor shall furnish new Construction Signs for all locations designated on the plans as Left in Place. Drums shall also include two NCHRP approved tire sidewall ballasts.

These Drums and Signs shall be left in place at the locations designated on the plans and/or as determined by the resident at the completion of this contract and shall become the property of the Authority. Any Signs that describe conditions that are not applicable at the completion of this contract shall be covered with 3/8" CDX exterior grade plywood that is painted black. The plywood must be secured such that it will remain for an extended duration and not cause damage to the sign itself. Method of securing the plywood covers shall be approved by the Resident prior to applying.

652.8 Basis of Payment

The following paragraphs are added:

Payment for Drums shall also include the weights approved for use to secure drums in place. Payment for Signs shall also include all posts, plywood, paint, mounting hardware and all additional incidentals necessary to install the sign covers.

All materials shall be in "like" new condition as determined by the Resident for final acceptance.

Payment will be under:

Pay Item		Pay Unit
652.332	Drum Left In Place	Each
652.351	Construction Signs Left In Place	SF

"The Contractor shall furnish flaggers as required by the contract documents or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the MaineDOT and administered by a MaineDOT-approved Flagger-Certifier. All flaggers must carry an official certification card with them at all times while flagging. For daytime conditions, flaggers shall wear a top (vest, shirt or jacket) that is orange, yellow, yellow-green, or fluorescent versions of these colors meeting ANSI 107-2004, Class 3, along with a hardhat with 360 ° retro-reflectivity. For nighttime conditions, flaggers shall wear all Class 3 apparel, meeting ANSI 107-2004, including a Class 3 top (vest, shirt or jacket) and a Class E bottom (pants or coveralls), shall be worn along with a hardhat with 360 ° retro-reflectivity and shall be visible at a minimum distance of 1000 ft. Flagger stations must be illuminated in nighttime conditions to assure visibility and will be specifically addressed in detail in the Contractor's TCP".

Flaggers shall not stop traffic on Turnpike mainline or interchange ramps. Only State Police are allowed to stop traffic on mainline or interchange ramps.

652.7 Method of Measurement

The following paragraph is added:

The measurement of Flaggers will be strictly limited to the following work activities:

- Construction of access road entrance at Cummings Road
- As spotters to determine safe egress of construction vehicles from the site. Flaggers are for construction vehicles only and shall not stop ramp traffic.

All other uses of Flaggers will not be measured for payment but shall be incidental to the Maintenance of Traffic Control Devices item, unless otherwise approved by the Resident Engineer.

APPENDIX B

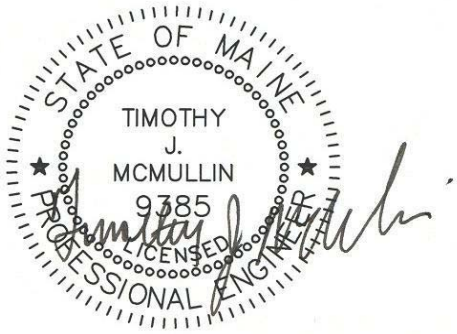
PORTLAND WATER DISTRICT SPECIFICATIONS

CONTRACT DOCUMENTS

FOR

CUMMINGS RD. & TURNPIKE CROSSINGS WATER MAIN REPLACEMENT

Scarborough/South Portland



July 2019

P O R T L A N D W A T E R D I S T R I C T
225 Douglass Street
Portland, Maine 04104-3553

TABLE OF CONTENTS

DIVISION 1: GENERAL REQUIREMENTS

SECTION 01010 – SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall furnish and install water main and appurtenances in Cummings Rd. and easements crossing the Maine Turnpike in Scarborough and South Portland as shown on the Drawings and specified herein.

B. The Owner is the Portland Water District. The contract agent is the Maine Turnpike Authority.

1.02 DUTIES OF THE OWNER

A. The Owner will locate the terminal points of the work and will also locate any of its facilities lying in close proximity which would in any way be a hazard to the Contractor's operations.

B. The Owner will operate any valves or hydrants which may be found desirable or necessary to be used for any purpose.

C. The Owner will notify customers of all work involving temporary shutdown of service.

1.03 DUTIES OF THE CONTRACTOR

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto.

B. Provide water mains to supply the Owner with a satisfactory, watertight pipeline, laid to proper line and grade in accordance with these contract documents, to the satisfaction of the Owner. The Contractor shall leave the site in a condition, which is suitable to the Owner, abutting landowners and any municipal or state authorities having jurisdiction over the areas involved.

C. The Contractor shall furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract.

D. The Contractor must give the District adequate notice of all planned activities such as shutdowns to allow time for customer notification.

E. The Contractor will furnish all fuel, gasoline, oil, etc. for the operation of his equipment, all tools and equipment, and all labor and supervision necessary for the handling of material, for excavation, installation, backfilling and cleaning the site as required. He will dispose of excess spoil and restore the land surface to the original contour over the entire length of the project. Restoration shall be made to the satisfaction of the MTA resident.

F. The Contractor will perform the pressure and leakage test and disinfection of the main as described herein in the presence of the MTA resident or Owner.

-- END OF SECTION --

SECTION 01150 – SITE CONDITIONS

PART 1 - GENERAL

1.01 PLANT AND EQUIPMENT

A. The Contractor shall furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract.

1.02 PIPE LOCATIONS

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

1.03 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall familiarize himself with all obstructions which he can foresee, such as existing pipes, services, conduits, ducts, sewers or any other such obstructions which might interfere with the Work, and shall make arrangements with the owners of such facilities so as to save the Owner harmless from any damages thereto caused by his operations and to make whatever arrangements might be necessary to move and restore or remove and replace these facilities. Costs associated with this Work shall be incidental to the Contract.

B. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at no additional cost to the Owner, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Owner.

C. The Contractor shall assume full responsibility for the protection of all trees, buildings, structures, and utilities, public or private, including poles, signs, services to buildings, buried utilities, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any

kind. Costs associated with this Work shall be incidental to the Contract. Any damage resulting from the Contractor's operations shall be repaired at no additional expense to the Owner.

D. Any damage to or displacement of street or highway surfaces due to blasting or otherwise shall be either replaced satisfactorily by the Contractor or shall be paid for by him to the authority responsible for the street or highway at no additional cost to the Owner.

-- END OF SECTION --

SECTION 01250 - MEASUREMENT AND PAYMENT

PART 1: GENERAL

1.01 METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

A. All measurements for payments will be based on completed work performed in strict accordance with the drawings and specifications, and on the contract bidding and payment item schedules. All work completed under the contract will be measured by the PORTLAND WATER DISTRICT ("DISTRICT") according to the methods outlined below. In cases where the payment clause in the specifications relating to any unit or lump sum price stated in the contract requires that the said unit or lump sum price cover and be considered compensation for certain work or material essential to the item, this same item will not be measured or paid for under any other pay item which may appear elsewhere in the specifications.

1.02 INCIDENTAL WORK

A. Incidental work items for which separate payment is not made, but is incidental to the water main items, include (but are not limited to) the following items:
   1. Pre-construction photographs
   2. Traffic control plan (per Section 652 of Special Provisions of Project Specifications)
   3. Clearing, grubbing and stripping
   4. Dewatering
   5. Clean-up
   6. Loaming and seeding
   7. Restoration of property
   8. Crossing other utilities, unless otherwise paid for
   9. Bonds, insurance, shop drawings, warranties and other submittals required by the contract documents
   10. Repair and replacement of utilities damaged by construction activities or for Contractor convenience and corresponding proper disposal of removed materials
   11. Weather protection
   12. Trench boxes, steel and/or wood sheeting, as required
   13. Dust control
   14. Permits not otherwise paid for or provided by the Owner
   15. Facilities for storage of materials to be incorporated into the Work
   16. Test pits to determine existing utility locations, soil conditions, and as required to complete the project
   17. Pavement markings
   18. Saw cutting, removal and disposal of existing pavement
   19. Resetting or replacement of existing street signs

1.03 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

When alterations in the quantities or work not requiring supplemental agreements are ordered and performed, the Contractor shall accept payment in full at the contract price for the actual quantities or work done. No allowance will be made for anticipated profits.

1.04 OMITTED ITEMS

Should any item contained in the bid form be found unnecessary for the proper completion of the work contracted, the Owner 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.

1.05 ITEMS NOT INCLUDED IN THIS SECTION

All items not included in this section shall be paid in accordance to the project Special Provisions, MTA Supplemental Specifications, or MaineDOT Standard Specifications.

PART 2: PAYMENT ITEMS:

2.01 ITEM NO. 603.281 Concrete Collar for Water Main

A. Method of Measurement: Actual number installed

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for installation, forming, concrete, bedding, and associated work as specified and shown on Drawings.

2.02 ITEM NO. 609.21 Concrete Slipform Curb

A. Method of Measurement: Linear feet

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for installation, forming, concrete, and associated work as specified and shown on Drawings.

2.03 ITEM NO. 802.321 & 802.322 Casing Spacers

A. Method of Measurement: Actual number installed

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for installation, spacers, test pits and associated work as specified and shown on Drawings.

2.04 ITEM NO. 822.3715, 822.3755 & 822.3765 Cl 52 DI Pipe

A. Method of Measurement: Linear feet as measured along the centerline of the pipe for the actual number of linear feet of pipe and fittings installed.

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for equipment, excavating, shoring and bracing, dewatering, pipe & gaskets, laying and jointing, connections to existing piping, removal and disposal of existing piping, capping pipes that are not removed, thrust restraint, select backfill, backfilling, testing, restoration, and associated work as specified and shown on the Drawings.

2.05 ITEM NO. 822.3734 – Concrete / Ductile Iron Adaptor

A. Method of Measurement: Actual number installed

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for installation (adaptor supplied by PWD), excavation, shoring and bracing, dewatering, grout, grouting, backfill, testing, testing and associated work as specified and shown on the Drawings.

2.06 ITEM NO. 822.3758 & 822.3768 – High Density Polyethelene Water Main

A. Method of Measurement: Linear feet as measured along the centerline of the pipe for the actual number of linear feet of pipe and fittings installed.

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavating, shoring and bracing, dewatering, pipe, fittings, casing end seals, fusing, locator wire, insulation, thrust restraint, select backfill, removal and disposal of existing piping, capping pipes that are not removed, testing, restoration and associated work as specified and shown on the Drawings.

2.07 ITEM NO. 823.3402 - Blow-Off Valve Assembly

A. Method of Measurement: Actual number installed

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, shoring and bracing, dewatering, piping, gate valve, fittings, valve box, installation, backfill, testing and associated work as specified and shown on the Drawings.

2.08 ITEM NO. 823.3411 & 823.3412 – Air Release Valve

A. Method of Measurement: Actual number installed

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, shoring and bracing, dewatering, corporation, angle

valve, fittings, operating rod, service box, valve box, installation, backfill, testing, testing and associated work as specified and shown on the Drawings.

2.09 ITEM NO. 823.3841 Gate Valve

A. Method of Measurement: Actual number installed

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, shoring and bracing, dewatering, valve, valve box, backfill, testing and associated work as specified and shown on Drawings.

2.10 ITEM NO. 825.431 Copper Service

A. Method of Measurement: Linear feet as measured along the centerline of the pipe for the actual number of linear feet of tubing and fittings installed.

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, shoring and bracing, dewatering, pipe, corporation, saddle, fittings, connection to existing service, service box, rod, curb stop, select backfill, backfilling and associated work as specified and shown on Drawings.

2.11 ITEM NO. 827.303 – Unsuitable Material Excavated Below Trench Grade

A. Method of Measurement: Cubic yard as measured in place prior to removal for the actual number of cubic yards excavated.

B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for removing unsuitable excavated material below trench grade and replacing with granular bedding material as directed by the MTA resident.

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. For all products to be incorporated into the Work submit to the M.T.A. resident who will distribute to Owner (Portland Water District) for approval sufficient information in the form of shop drawings, product data and/or samples such that the Owner can determine that the product is in compliance with the Technical Specifications and Drawings.

B. Submit two (2) copies of each submittal. One (1) copy will be returned to the Contractor. Each copy shall include a cover sheet which clearly identifies the product and corresponding specification section. Each cover sheet shall bear the Contractor's stamp and signature certifying that the submittal is in full compliance with the Contract Documents or that any deviations from the Contract Documents are clearly identified on a separate sheet(s) labeled "Deviations From Contract Documents" and attached to the cover sheet.

C. The Owner (P.W.D.) shall review the submittals and indicate their status as:

1. “A” - Approved Subject to the Requirements of the Contract

2. “B” - Approved as Noted, Subject to the Requirements of the Contract

3. “C” – Revise as Noted, Resubmittal Required

4. “D” – Not Approved

D. Owner's review is only for general conformance with the design concept and general conformance with the information given in the Contract Documents. Corrections or comments made during the review do not relieve the Contractor from compliance with the requirements of the Contract Documents.

E. Re-submittals: Make re-submittals under procedures specified for submittals; identify changes made since previous submittal.

F. Contractor shall be responsible for the delays and or additional expenses that result from the Contractor's failure to submit a complete submittal and/or to identify portions of the submittal that does not conform to the specifications.

-- END OF SECTION --

SECTION 01710 – SITE CLEANUP

PART 1 - GENERAL

1.01 APPLICABILITY

A. This section applies to project cleanup activities to be conducted throughout the entire duration of the Work.

PART 2 – PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 CLEANUP DURING WORK PROGRESS

A. Proceed with construction cleanup as the Work progresses

1. Remove mud, oil, grease, soil, gravel, trash, scrap, debris, and excess materials that are unsightly or may cause accidents to persons or properties.

2. Properly store tools and materials when not in use away from trafficked areas.

B. During the progress of the work, the construction areas shall be kept clean and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damages repaired so that the public and property owners will be inconvenienced as little as possible. Cleanup shall follow directly behind the progress of the Work.

C. Contractor shall fill in all depressions and water pockets on public and private property caused by his operations; clean all drains, ditches and culverts which have been obstructed by his work; and, shall leave the site in a neat condition wherever his operations have disturbed existing conditions.

3.02 FINAL CLEANUP

A. Final cleanup (including any property restoration, replacement or restitution per the Contract) shall be completed to the satisfaction of the right-of-way grantor, or any abutters, as well as to the satisfaction of any municipal or state authority which may be involved if in public right-of-way.

-- END OF SECTION --

DIVISION 2: SITE WORK

SECTION 02230 – CLEARING, GRUBBING AND RESTORATION

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall do all clearing, grubbing, topsoil stripping, and restoration necessary for the construction of this project.

PART 2 - PRODUCTS

1. MATERIALS

A. Materials shall be at Contractor's option, except that stripped topsoil shall be stockpiled and replaced in approximately its original location and to its original depth.

PART 3 - EXECUTION

3.01 CLEARING AND GRUBBING

A. Before any excavation shall begin, the Contractor shall remove all underbrush, trees, stumps, or other obstructions within the work area, but shall not work on any private property without permission. The Contractor and MTA resident shall agree upon the extent of clearing within the work area prior to the start of work. The Contractor shall not deviate from the agreed upon limits without the permission of the MTA resident.

B. All limbs, stumps, etc., shall be disposed of offsite by the Contractor and at his expense unless otherwise specified.

C. After the trees have been cut and stumps removed from wooded areas and in all field areas, existing topsoil and humus material shall be excavated and stockpiled by the Contractor.

D. If the Contractor fails to salvage and reuse existing topsoil and humus material, he shall furnish sufficient loam from off the project site to restore the disturbed areas to match the existing topsoil depth, at no additional expense to the Owner.

E. No excavations for pipe laying shall begin until the existing topsoil and humus material has been stockpiled.

3.02 CARE AND RESTORATION OF EXISTING PROPERTY

A. Excavating machinery shall be of suitable type and be operated with care to prevent injury to trees not to be cut, and particularly to overhanging branches or limbs.

B. Branches, limbs and roots shall not be cut except by permission of the MTA resident. All cutting shall be smooth and neatly done without splitting or crushing. In case of cutting or unavoidable injury to branches, limbs, or trunks of trees, the cut or injured portion shall be neatly trimmed and covered with an application of grafting wax or tree-healing paint as directed.

C. Cultivated hedges, shrubs, and plants which might be injured by the Contractor's operations shall be protected by suitable means or shall be dug up and temporarily replanted and maintained. After the construction operations have been substantially completed, they shall be replanted in their original position and cared for until growth is re-established. If cultivated hedges, shrubs and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work.

D. All surfaces which have been damaged by the Contractor's operations shall be restored to a condition at least equal to that in which they were found immediately before work was started.

E. The Contractor shall be fully responsible for all damages to public and private property and will be expected to carefully protect from injury all walls, fences, buildings, and underground facilities. If removal and replacement is required, it shall be done so that the replacement is equivalent to that which existed prior to construction and shall be paid for by the Contractor.

-- END OF SECTION --

SECTION 02260 – SEDIMENTATION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment and incidentals necessary to perform all installation, maintenance, removal and area cleanup related to sediment and erosion control work as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to installation of silt fences, sediment traps, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, erosion control blanket, and final cleanup.

1.02 SUBMITTALS

A. Within 10 days after award of Contract, submit to the MTA resident for approval technical product literature for all commercial products to be used for sedimentation and erosion control.

1.03 REFERENCE MANUAL

A. Except as otherwise specified herein, the material and construction shall be in accordance with the Department of Transportation "Standard Specifications for Highways and Bridges of the State of Maine" and the "Maine Erosion and Sedimentation Control Handbook for Construction, Best Management Practices" (BMP Handbook).

1.04 PERFORMANCE REQUIREMENTS

A. The CONTRACTOR shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to offsite areas or into streams and wetland areas via surface runoff or underground drainage systems. Measures in addition to those shown on the drawings necessary to prevent the movement of sediment off site, control erosion or stabilize disturbed areas shall be installed, maintained, removed and cleaned up at no additional cost to the OWNER.

B. Sedimentation and erosion control measures shall conform to the requirements of the BMP Handbook.

C. Where CONTRACTOR's effort to control erosion has been demonstrated to be ineffective or potentially ineffective in the opinion of the MTA resident, the MTA resident may order that the erosion control plan be amended and that additional erosion control measures be constructed at no additional cost to the OWNER.

1.05 SEQUENCE OF CONSTRUCTION

A. All hay bale check dams and silt fencing shall be in place below or adjacent to construction areas before actual construction begins. These devices shall remain in

place until a healthy grass cover is obtained and the site is stabilized. These temporary structures shall be inspected weekly throughout the construction phase. They shall be repaired or replaced when necessary. These devices shall be removed when the area they serve is completely stabilized.

B. Permanent re-vegetation or seeding of all disturbed areas shall occur immediately upon completion of work or, if temporary stabilization measures were used, within 7 days from the time the area was last actively worked. Temporary stabilization measures are required within two days from the time the area was last actively worked or prior to storm events.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Silt Fence

1. Steel or wood posts shall be a minimum of 5 feet in length.

2. Silt fence fabric shall be a woven, polypropylene, ultraviolet resistant material such as Mirafi 100X as manufactured by Mirafi, Inc., Charlotte, N.C. or equal.

B. Mulch material for all slopes equal to or greater than 20% shall be an erosion control blanket (ECB). The ECB shall consist of 70% long fiber hay or straw and 30% coconut fiber. The fibrous material shall be held in place by top and bottom netting sewn together. The fibrous material shall be reasonably free from noxious weeds or other undesirable material. The ECB shall be Type SC150 as manufactured by North American Green, or approved equal.

C. For slopes less than 20% and level areas, mulch material shall consist of long fiber hay or straw reasonably free from noxious weeds or other undesirable material. No material shall be used which is so wet, decayed, or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings or other short fiber material shall be used unless directed. The hay or straw shall be treated with a mulch tackifier.

D. Latex acrylic copolymer such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, California, or approved equivalent, shall be used as hay or straw mulch tackifier. Asphalt tackifiers are not allowed.

PART 3 - EXECUTION

3.01 MINIMIZATION OF EXPOSED SOILS

A. Minimizing the exposed soil areas on the construction site is one of the most important and reliable methods of erosion control. The CONTRACTOR must phase the work so that areas of bare soil will be minimized. Exposed areas must be treated as described herein and in the BMP Handbook.

3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES

A. Temporary erosion and sedimentation control measures will include silt fences, hay bale barriers, temporary seeding, temporary mulching and topsoil stockpiling.

B. Silt fence will be placed down slope of all construction areas which drain toward a stream, wetland or improved area.

C. Hay bale barriers will be used as necessary until final restoration is complete. They may also be used as check dams in drainage areas. Hay bales will be staked end to end in an excavated trench four inches deep across the area of runoff.

D. Temporary mulching will be placed on all disturbed areas within two days or prior to any storm event. Mulch anchoring will be used on areas where the slope is greater than 5% or when placed after September 15. Straw mulch shall be applied at a rate of 90 lbs. per 1000 sq. ft. All mulched areas will be inspected before and after storms. If less than 90% of the surface is covered by mulch, additional mulch shall be applied immediately. Mulching shall be installed and maintained as recommended in the BMP Handbook.

E. Topsoil shall be stockpiled on site with silt fence installed down slope of the piles. These stockpiles shall be mulched in accordance with the temporary mulching requirements.

3.03 INSTALLATION

A. Silt Fence Installation

1. Position silt fences as shown on the Drawings and as necessary to prevent off site movement of sediment produced by construction activities as directed by the MTA resident.

2. Dig trench approximately 4 inches wide and 4 inches deep along proposed fence lines.

3. Drive stakes 8 feet on center (maximum) at back edge of trenches. Drive stakes 2 feet (minimum) into ground.

4. Attach filter fabric on stakes to bottom of trench with about 4 inches of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and secure.

5. Backfill trench with excavated material and tamp.

6. Install pre-fabricated silt fence according to manufacturer's instructions.

3.04 MAINTENANCE AND INSPECTIONS

A. Inspections

1. CONTRACTOR shall make a visual inspection of all sediment control devices daily and immediately before and after every rainstorm.

2. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas or into streams or wetland areas, CONTRACTOR shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

B. Device Maintenance

1. Silt fences

a. Remove accumulated sediment once it builds up to one-half of the height of the fabric.

b. Replace damaged fabric or patch with a two foot minimum overlap.

c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.

3.05 EROSION CONTROL BLANKET

A. Install erosion control blankets in accordance with manufacturer's instructions. Properly prepare, fertilize and seed the area to be covered with permanent vegetation before the blanket is applied. Apply the blankets in the direction of water flow and staple together in accordance with manufacturer's instructions. Side overlaps shall be 2-inch minimum. The staples shall be made of wire .091-inch in diameter or greater, "U" shaped with legs 10 inches in length and a 1- inch crown. The staples shall be driven vertically into the ground at a rate of one staple per square yard according to manufacturer's staple pattern guide.

B. Bury upper and lower ends of the matting to a depth of 4 inches in a trench. Where the matting must be cut or more than one roll is required, turn down upper end of downstream roll into a slit trench to a depth of 4 inches. Overlap lower end of upstream roll 4 inches past edge of downstream roll and staple.

C. To ensure full contact with soil surface, roll matting with a roller weighing 100 pounds per foot of width perpendicular to flow direction after seeding, placing matting, and stapling. Thoroughly inspect after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below.

3.06 REMOVAL AND FINAL CLEANUP

A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Re-grade all areas disturbed during this process and stabilize.

-- END OF SECTION --

SECTION 02315 – EARTHWORK FOR WATER MAIN CONSTRUCTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes all excavation for water mains, hydrants and appurtenances, including drainage, sheeting and bracing, backfilling, disposal of surplus material, and miscellaneous grading. All work shall be done as indicated on the drawings and as herein specified.

B. Excavation for water mains shall be the width and depth as indicated on the standard details. Excavation for hydrants and appurtenances shall provide suitable room for their construction.

C. The Contractor shall furnish and place all sheeting, bracing and supports, and necessary dewatering, and shall carry out the excavation in such a manner as to eliminate all possibilities of undermining or disturbing existing pipelines, utilities, roadways, shoulders and/or structures.

D. The Contractor shall furnish, place and compact various types of bedding material and trench sand as called for in the specifications or as directed. The types and quality of bedding and backfill material are specified in this section, but its use for pipe bedding, backfill, replacement of unsuitable material excavated below trench grade, and other uses are as specified elsewhere.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bedding Material

1. Screened or crushed gravel bedding material shall be hard durable particles free from organic matter, lumps of clay and other deleterious substances. The gradation shall meet the requirements of the following table and MDOT specifications Section 703.06 Type B aggregate.

Sieve Size Designation	% By Weight
½ inch	35 - 75
¼ inch	25 – 60
No. 40	0 – 25
No. 200	0 – 5.0

2. Select backfill as specified below may be used for bedding material.

3. Bedding material shall not contain particles of rock which have any dimensions greater than 4".

B. Select Backfill

1. Sand backfill shall be hard, durable particles of granular material with 100% passing the 1/2" sieve and between 0-15 % passing the #200 mesh. All percentages are by weight. Sand shall be graded so as to secure the required compaction.

C. Backfill

1. Suitable native material that does not contain stone or rock particles with any dimensions greater than 8".

2. Granular borrow (MaineDOT 703.19)

PART 3 - EXECUTION

3.01 EXCAVATION

A. When any pavement, regardless of type, must be cut, it shall be done in a neat and symmetrical manner by use of a saw, chisel, or other suitable method. In no case shall pavement be torn up with a backhoe bucket except between and inside of cuts previously made as above. Should any further pavement be broken, outside of the cuts, as by blasting, such damaged pavement shall be cut out in a neat and orderly fashion.

B. The Contractor shall perform all excavation of every description and of whatever substances encountered to the depths shown on the drawings or directed by the MTA resident.

C. No extras will be allowed for quicksand excavation, muck excavation, or any other type unless specifically provided for in the bidding schedule.

D. Surplus excavated material may be used at other parts of the construction project as required for fill, etc. Excess material shall be disposed of by the Contractor.

E. The sidewalls of all trench excavation shall be kept as nearly vertical as possible in all roadways, lawns, near homes, etc. by sheeting, bracing, or other means. The width of the trench at a point six (6) inches above the top of the water pipe shall not be greater than the width detailed. If the type of excavated material will not allow the width detailed, then the trench shall be properly sheeted and braced. The cost of sheeting, bracing, or other means is included in the cost of the pipelines and no extras will be allowed.

F. The excavation shall be made to secure a flat bottom trench (undisturbed earth bottom) for the full length of the pipe so as to give a uniform support to the pipe

and shall be in accordance with ANSI A21.50 (AWWA C150), Type 2 Laying Condition.

G. The bottom of the trench shall be accurately graded to provide support to the full length of the pipe barrel. Excavate at each bell to prevent bell from bearing on trench bottom.

3.02 EXCAVATION BELOW TRENCH GRADE

A. By mistake of Contractor: Where the bottom of the trench shall, by mistake of the Contractor, have been taken out to a greater depth than required, it shall be refilled to the proper grade with bedding material, and all to be placed and compacted as specified at no additional cost to the Owner.

B. By instruction from MTA resident: If, in the opinion of the MTA resident, existing material below trench grade is unsuitable for properly laying the pipe, the Contractor will excavate and remove the unsuitable material and replace the same with bedding material as authorized by the MTA resident and properly compacted to his satisfaction. The Contractor will be paid under the item titled "Unsuitable Material Excavated Below Trench Grade."

3.03 EXCAVATION NEAR EXISTING UTILITIES, ETC

A. It will be necessary to excavate near existing pipes, drains and other utilities in certain locations. Some of these have been indicated on the drawings, but no attempt has been made to show all of the services and the completeness and accuracy of the information given is not guaranteed. The Contractor shall call "Dig-Safe" at least three business days in advance of any excavation to allow utilities to locate underground facilities.

B. As the excavation approaches pipes, conduits, or other underground structures and utilities, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools.

C. If the utility is of the opinion that at any point sufficient or proper support has not been provided, they may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his responsibility for the sufficiency of such supports. It shall be the responsibility of the Contractor to prevent damage to or displacement of utilities and to consult with and request the concurrence of the utility company's representative in this matter at all locations. The cost of protecting such utilities shall be considered incidental to the cost of laying the pipe.

3.04 TRENCH SURCHARGES

A. The excavated material shall be placed adjacent to the excavation in a manner to cause no excessive surcharge on the trench bank nor to obstruct free access to hydrants and valves. Should traffic or other conditions make it impractical or

unsafe to stack material adjacent to trench, it shall be hauled and stored at a location provided by the Contractor and at the expense of the Contractor. When required, it shall be re-handled and used in backfilling the trench by the Contractor and at his expense.

3.05 SHEETING AND BRACING

A. The Contractor shall be responsible for the design, construction, maintenance and safety of all sheeting and bracing required to support the sides of the excavation and to prevent the movement of earth which could in any way damage or endanger adjacent structures, utilities, roadways, increase the width of the excavation to more than that specified, or delay the work.

B. All sheeting, bracing and shoring is to be included in prices bid for several items of work in bidding schedule and will not be paid for as separate items.

C. No shoring shall be left in place unless so directed by the MTA resident.

3.06 DRAINAGE AND DEWATERING OF EXCAVATIONS

A. The Contractor shall conduct his operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work. Under no conditions shall water be allowed to rise in unbackfilled trenches after pipe has been placed.

B. Accumulated water, ice and snow shall be promptly removed and disposed of by dewatering. Disposal shall be carried out in a manner which will not create a hazard to public health; nor cause injury to public or private property, work completed or in progress, or public streets; nor cause any interference in the use of streets and roads by the public. Pipes under construction shall not be used for drainage of excavations.

C. During construction, when an unstable condition in the pipe sub-grade has been created due to the Contractor's excavation, the sub-grade shall be stabilized by dewatering or other means accepted by the MTA resident.

3.07 BACKFILLING – GENERAL

A. In general and unless other material is indicated on the drawings or is specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations or as specified.

B. Frozen materials shall not be placed in the backfill, nor shall material be placed upon frozen material. Previous frozen material shall be removed or shall be otherwise treated as required before new backfill is placed.

C. Backfilling shall be done as soon as practical after the pipe has been laid and jointed.

3.08 SUITABLE BACKFILL MATERIAL

A. Suitable backfill material shall be the following or a combination of the following:

1. Excavated material that will compact to the compaction requirements.

2. Material that does not contain rocks larger than 8" in any dimension.

3. Dry clay backfill free from lumps.

4. Wet clay that alone would pump but when mixed with sand and/or gravel will be stable and will compact.

3.09 BACKFILLING PIPE TRENCHES

A. As soon as practicable after the pipes have been laid and jointed, backfilling shall begin and shall proceed until it is completed or has sufficient backfill to allow pipe testing.

1. The first layer of suitable backfill material shall be brought half-way up the pipe and compacted to 80% maximum density and then the normal backfilling shall begin and shall be compacted as specified.

2. All backfill shall be thoroughly compacted by hand tamping as placed, by use of mechanical or vibratory compactors, or by other acceptable methods.

3. Remainder of the trench shall be backfilled as follows:

a. In paved areas, road shoulders and seeded areas, the entire depth of trenches above the center line of the pipe shall be backfilled in eight (8) inch layers with suitable backfill material and each layer thoroughly and carefully compacted as specified. Bring backfill up to bottom of gravel base and/or loam.

b. In other areas, the trench above the center- line of the pipe shall have suitable backfill material placed and compacted in eighteen (18) inch maximum layers as specified.

B. The nature of the excavated materials will govern both their acceptability for backfill and the method best suited for their placement and compaction in the backfill.

1. Both the materials and the methods shall be subject to the acceptance of the MTA resident.

2. No stones or rock larger than 8" in the greatest dimension shall be placed in the backfill.

C. Backfilling in public right-of-way, along the streets or highways in or along shoulder, berm or backslope shall be done in accordance with the specifications and requirements of the state or municipality, whichever is responsible for the street or highway involved. Responsibility for the fulfillment of permit conditions or any other applicable requirements of the street or highway authority shall be the obligation of the Contractor. Surface restoration shall be carried out to the satisfaction of the street or highway authority or as shown on the plans.

D. Backfilling shall follow pipe laying as closely as reasonable, so that a minimum of trench shall be open at any time. The regulations of the highway authorities shall be observed as regards the amount of trench to be open at any one time. Overnight, and especially over weekends and holidays, the amount of open trench shall be kept at an absolute minimum. Any caved-in trench, especially after heavy rain and flooding, shall be cleaned out and the bottom consolidated before any additional pipe shall be laid.

3.03 TOP OF BACKFILL

A. In paved and shoulder areas, backfill shall be carried up to pavement or shoulder sub-grade ready to receive the gravel base. In other areas, backfill shall be brought up to adjacent finished grade minus the depth of any required topsoil and so as to provide a finished surface slightly mounded over the trench. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required for proper compaction, and shall then be refilled and compacted with the surface restored to required grade and degree of compaction, mounded over, and smoothed off, at no additional expense.

B. In unpaved areas, the gravel topping shall be left in a smooth and even condition, with no large stone on or in the surface. In cases where a paved surface has been broken, a temporary bituminous patch and/or a permanent paving restoration shall be made as required by the appropriate local or state road authority.

3.04 COMPACTION

A. Compaction densities specified herein shall be the percentage of the maximum density obtainable at optimum moisture content as determined and controlled in accordance with AASHTO Standard T-180, Method A or D depending on the material size. Field density tests shall be made in accordance with AASHTO Standard T-147.

B. Each layer of backfill shall be moistened or dried as required and shall be compacted to the following densities, unless otherwise specified in the project specifications.

1. Bedding material: 80%

2. Suitable backfill material under paved or shoulder areas: 90%

3. Gravel base

    a. Under paved areas: 95%

    b. In shoulder areas: 90%

    c. As replacement for unsuitable material excavated below grade: 90%

4. Loam areas: 90%

5. All other areas: 85%

C. Methods and equipment proposed for compaction shall be subject to prior acceptance by the MTA resident. Compaction generally shall be done with vibrating equipment. Displacement of, or injury to, the pipe and structure shall be avoided. Movement of in-place pipe or structures shall be at the Contractor's risk. Any pipe or structure damaged thereby shall be replaced or repaired as directed by the MTA resident and at the expense of the Contractor.

D. Testing:

1. Field density tests may be ordered by the MTA resident for each foot of depth of backfill at an average interval of 200 feet along the trench.

2. The Contractor shall furnish all necessary samples for laboratory tests and shall provide assistance and cooperation during field tests. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.

3. Any costs of retesting required as a result of failure to meet compaction requirements shall be borne by the Contractor.

3.05 FILL AND GRADING

A. Excavated material not required for backfilling around pipes or structures may be used for fill in areas which require material for re-grading.

B. The re-grading shall be carried out as directed by the MTA resident, so that all surface water will drain towards brooks or drainage pipes.

C. All material shall be of such nature that after it has been placed and properly compacted, it will make a dense and stable fill.

3.06 PROTECTION OF EXISTING STRUCTURES

A. All existing pipes, wires, poles, fences, property line markers and other items, which must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from injury by the Contractor, at no additional cost to the Owner. Should such items be injured, they shall be restored by the

Contractor, without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.

3.07 ACCOMMODATION OF TRAFFIC

A. The Contractor shall construct and maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. The Contractor shall furnish and erect, without cost to the Owner, substantial barricades at crossing of trenches, or along the trench, to protect the traveling public.

B. The Contractor shall not obstruct fire hydrants.

-- END OF SECTION --

SECTION 02537 – WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.01 SCOPE

A. This section includes the furnishing and installing of ductile iron water pipe and ductile iron or cast iron fittings as specified.

1.02 SUBMITTALS

A. Submit shop drawings for all material in accordance with the provisions of Section 01300.

PART 2 - PRODUCTS

2.01 GENERAL

A. Upon approval of the proposed Manufacturer and Product Series, the Contractor shall utilize that source for said material for the entirety of the Work unless otherwise approved by the MTA Re to maintain consistency throughout the project.

B. Pipe delivered for construction shall be strung and protected so as to prevent entrance of any foreign material.

C. Any defective or imperfect materials furnished by the Contractor shall be marked as such and removed immediately from the site. Satisfactory materials shall be substituted for that rejected at no additional cost to the Owner.

D. All materials, products and coating that contact drinking water shall be certified to meet NSF/ANSI Standard 61 – latest revision, Drinking Water System Components – Health Effects.

2.02 ATTACHMENT HARDWARE

A. Stainless Steel: Type 304 – contains the addition of Molybdenum to the nickel-chromium steels.

B. High Strength/Low Alloy Steel: Trade name for cold formed T-head bolts containing alloying elements such as copper, nickel, and chrome (Cor-Ten).

2.03 CAST IRON OR DUCTILE IRON SPLIT REPAIR SLEEVE

A. Split repair sleeve shall be mechanical joint.

B. The side rubber gaskets shall be rectangular to cross-section and shall fit into grooved channels in the casting. These gaskets shall extend the entire length of the sleeve.

C. Split repair sleeve shall be AB-CD pattern to permit use of plain rubber and duck-tipped gaskets for various O.D. piping sizes.

D. Mechanical joint with accessories furnished; glands, gaskets and Cor-Ten T-bolts and nuts or equal.

E. All side bolts shall be Stainless Steel (Type 304) or silicone bronze.

F. Interior and exterior to be bituminous coated with a minimum of 4 mils D.F.T.

G. The sleeve shall be provided with a 2" F.I.P.T. test port with brass plug.

2.04 CORPORATION STOP

A. Conforming to AWWA C-800.

B. ¾" to 2" curb stops shall be ball valve design with brass ball that is Teflon coated or brass ball with Teflon seats.

C. The ball shall be supported by seats which are water tight in either direction.

D. The valve shall have a full port opening.

E. The body of the corporation stop shall be of heavy duty design.

F. The valve working pressure shall be 300 psi.

G. Approved Manufacturers:

1. A.Y. McDonald
2. Cambridge Brass
3. Ford Meter Box Co.
4. Mueller Co.

2.05 CURB STOP

A. Conforming to AWWA C-800.

B. ¾" to 2" curb stops shall be ball valve design with brass ball that is Teflon coated or brass ball with Teflon seats.

C. The ball shall be supported by seats which are water tight in either direction.

D. The valve shall have a full-port opening.

E. The valve shall open with ¼ turn (90°) with a check or stop.

F. The valve shall not have a drain.

G. The valve stem shall have 2 “O” rings and a bronze ring lock which holds the stem solidly in the valve body.

H. The valve body shall be of heavy duty design.

I. The valve working pressure shall be 300 psi.

J. Approved Manufacturers:

1. A.Y. McDonald
2. Cambridge Brass
3. Ford Meter Box Co.
4. Mueller Co.

2.06 CUT-IN SLEEVE

A. The sleeve shall be mechanical joint to plain-end type.

B. The sleeve shall fit over either AB or CD pattern pipe.

C. Interior coating– Seal-coated – AWWA C104-74, min. 4 mils D.F.T.

D. Exterior coating – Bituminous coated, min. 4 mils D.F.T.

E. Mechanical joint connections

1. Glands: Duck-tipped for AB pipe, Plain Gaskets for CD pipe
2. Cor-Ten tee bolts and nuts

F. Cut-in sleeves shall have at least one stop-screw in sizes up through 10” and at least 2 stop-screws in 12” size.

G. The stop-screw “O” ring shall be recessed into the body of the sleeve between stop-screw and body.

H. Approved Manufacturers

1. Mueller Co.

2.07 DUCTILE IRON FITTINGS

A. Fittings include but are not limited to bends, reducers, off-sets, tees and sleeves.

B. Material shall be ASTM A536 latest, grade 70-50-05, in accordance with AWWA C110 (latest revision) for fittings larger than 24" and C153 (latest revision) for fittings 3" thru 24".

C. Fittings shall be cement lined AWWA C104 (latest revision) or fusion bonded epoxy coated with a 5 mil nominal thickness per AWWA C550 and C116.

D. Interior seal coated AWWA C104 with minimum of 4 mils dry film thickness.

E. Exterior bituminous coated, 4 mils minimum dry film thickness or fusion bonded epoxy coated with a 5 mil nominal thickness per AWWA C550 and C116.

F. Sleeves shall not be cement lined, but shall be bituminous coated inside to 4 mils dry film thickness. All sleeves shall be long body type.

G. Mechanical joint with accessories furnished: D.I. glands, gaskets, Cor-Ten T-bolts and nuts

H. Class 350 pressure rating in accordance with AWWA C153 - 3"-24" sizes.

I. Class 250 pressure rating in accordance with AWWA C110 - 30"-48" sizes.

J. The "compact design" fittings must provide adequate space for the MJ joint and accessories to be installed without special tools (i.e. Lowell wrench can be used).

2.08 DUCTILE IRON PIPE

A. Ductile iron pipe shall meet requirements of AWWA Standard C-151 (latest revision) and be cement lined and seal coated to meet AWWA Standard C-104 (latest revision).

B. Joints shall meet requirements of AWWA C-111 (latest revision).

C. Interior seal coated, bituminous paint oil cut, emulsion not acceptable, thickness minimum of 2 mils dry film thickness.

D. Exterior bituminous coated with minimum of 2 mils dry film thickness.

E. Class 52 wall thickness, 4-inch diameter through 12-inch diameter inclusive.

F. Ductile Iron Pipe with diameters 16-inches and larger shall be approved by PWD.

G. State nominal laying length and mark shorter lengths near bell.

H. Mechanical joint pipe to be furnished with gland, gaskets and Cor-Ten bolts and nuts.

I. Approved Manufacturers

1. American Cast Iron Pipe

2. U.S. Pipe

2.09 HIGH DENSITY POLYETHELENE PIPE

A. HDPE pipe shall be manufactured in accordance with AWWA C906. This material shall have a long term Hydrostatic Strength of 1600 psi when tested in accordance with ASTM D2837. HDPE shall be manufactured from PE 4710 polyethylene compounds that meet or exceed ASTM D3350 cell classification 445574. The manufacturer shall comply with NSF Standard 61 and/or Standard 14 and must be certified by the NSF International for potable water. Joints shall meet requirements of AWWA C-111 (latest revision).

B. The pipe and fittings shall have a Standard Dimension Ratio (SDR) of 11 and be rated for a working pressure of 200 psi at a temperature of 75 degrees Fahrenheit with a service life of 50 years. All pipe and fittings shall be ductile iron pipe size.Exterior bituminous coated with minimum of 2 mils dry film thickness.

C. 2” and smaller diameter service connections shall be made using an electro fusion transition corporation saddle. Outlet material shall be brass alloy and the compression ring shall be 304 stainless. Larger diameter services connections shall be made using electro fusion branch saddles compatible with the pipe.

D. A 10 gauge insulated (for direct buried use) solid copper wire shall be fastened to the buried pipe to facilitate electronic pipe locating. The wire shall be fastened at two locations per length. Wire share be polyethelene coated per ASTM D-1248. Insulation thickness shall be a minimum of .030”.

E. Approved Manufacturers

1. Performance Pipe
2. JM Eagle
3. Isco Industries
4. Or Equal

2.10 FIRE HYDRANT

A. The hydrant shall open right.

B. Operating nut shall be DI or bronze, pentagon in shape with dimensions:

1. Top 1-13/16” tapering to 1-7/8” on bottom

C. Nozzles:

1. Two (2) each: 2-1/2” National Standard Thread
2. One (1) each: 4-1/2” National Standard Thread

D. Port covers shall be supplied without chains and shall have the same size pentagon operator as specified in 3.0(b) above.

E. Traffic model hydrant with breakaway feature.

F. Barrel Length

1. 6 ft. cover, 6-1/2 ft. bury; or

2. 5-1/2 ft. cover, 6 ft. bury; or

3. 5 ft. cover, 5'-6" bury

G. Hydrant shoe or base shall have 6" MJ inlet and 5-1/4" valve opening with non-draining bronze seat that is permanently plugged. Valve seat and sub-seat arrangement shall be bronze to bronze. Horizontal and vertical blocking planes manufactured into hydrant base.

H. Bolts

1. All buried mechanical joint bolts and nuts (T-head, etc.) shall be Cor-Ten or equal

2. All buried flange joint bolts shall be stainless steel (Type 304) or silicone bronze

I. Protective Coatings

1. All paintings and coatings shall be a minimum of 3 mils total dry film thickness, unless noted

2. The internal area of the hydrant base, which is normally exposed to water and which includes the internal body of hydrant shoes, including lower valve plate, shall be epoxy coated

3. All internal and external cast iron or ductile iron components shall be coated with an approved bituminous coating, 3 mils minimum.

4. Coatings for upper barrel - exterior:

a. Surface preparation blast clean SSPC-SP-6

b. Primer Sherwin Williams Red Oxide E61RC21, 1.5 mils, dry

c. Finish coat Sherwin Williams – Regal Yellow, F78Y30, 1.5 mils, dry or sufficient paint to hide the second coat

d. Total dry film thickness - 3 mils minimum

5. Coatings for bonnet, operating nut, port cap:

a. Surface preparation: Blast clean, SSPC-SP-6

b. Exterior primer

c. Exterior aluminum

d. Total dry film thickness: 3 mils minimum.

J. PWD personnel shall install flow indicator collars on all new hydrants.

K. Approved Hydrants:

1. Clow Eddy – with lower stern machined from bar stock

2. American Darling Models: B62B-1, B62B-5

2.11 PIPE JOINT RESTRAINT

A. Use in conjunction with mechanical joint fittings.

B. The joint restraint ring and its wedging components shall be made of ductile iron conforming to ASTM A536-80.

C. Dimensions of the restrainer must allow use with standard M.J. bell conforming to AWWA C111 and AWWA C153.

D. Restrainer must restrain up to 350 psi of working pressure in 3" to 16" size and 250 psi of working pressure in 18" to 48" size with a 2:1 safety factor.

E. Torque limiting twist off nuts shall be used to ensure proper actuation of the restraining wedges where applicable.

F. Approved Manufactures

1. Sigma Super Lug

2. Ford Uni-Flange Series 1400

3. Ebba Mega Lug

4. Romac Grip Ring

5. Star Grip Series 300

6. Romac Romagrip

7. MJ FIELD LOK Gasket

2.12 POLYETHYLENE ENCASEMENT

A. Tube type polyethylene encasement shall be installed on all ductile iron pipe and fittings in accordance with AWWA Standard C105 - latest revision, Method A.

B. Polyethylene encasement shall be either linear low-density polyethylene (LLDPE) film with a minimum thickness of 8-mil or high-density, cross-laminated polyethylene (HDCLPE) film with a minimum thickness of 4-mil.

C. Circumferential wraps of tape or plastic tie straps shall be placed at 2-ft. intervals along the barrel of the pipe.

D. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, and so forth, on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embankment material from becoming trapped between the pipe and the polyethylene.

E. The polyethylene film shall be fitted to the contour of the pipe to effect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, plastic tie straps, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.

F. Three layers of polyethylene adhesive tape shall be wrapped around any polywrapped pipe where a tapping machine will be placed. All copper services connected to a pipe wrapped in polyethylene encasement shall be wrapped within three feet of the pipe.

2.13 PVC PIPE

A. For all water main installations that are less than 4" I.D. (4" and larger use ductile iron), the District will require use of 2" I.D. PVC plastic water pipe meeting the following: Under special site conditions the District does require the use of C-900 PVC in sizes larger than 4".

B. Two inch diameter (2")

1. The I.D. shall be a minimum of 2"

2. The O.D. shall be a maximum of 2.38"

3. The minimum wall thickness shall be 0.113"

4. The minimum working pressure rating shall be 200 PSI (SDR-21).

5. The pipe shall conform to standard ASTM 2241.

6. The pipe shall be provided in 20' lengths. If approved by the MTA Resident, field cutting per Manufacturer's recommended practices.

7. The gasket or O-Ring material shall be rubber meeting ASTM F 477 and of the "permanent use" type.

8. Fittings: Standard AWWA C900 fittings are not available in the 2" I.D. and therefore "steel pipe" class fittings, or Certa-Lok Yelomine couplings and fittings meeting ASTM D 3139 shall be used. The normal nomenclature for "steel fittings" is Schedule 40 or Schedule 80, with the respective pressure ratings of 280 PSI and 400 PSI. Both of these fitting classes are acceptable for use.

9. Service Connections: All service connections shall be made with tapping saddles* per Portland Water District specifications or by use of tees meeting the above noted fitting specifications.

10. An eight gauge bare copper wire shall be fastened to the buried PVC pipe to facilitate electronic pipe locating. The wire shall be fastened at two locations per length and not at any joint.

C. The District requires 200 PSI (SDR-14) PVC pipe for other sizes such as 4", 6", 8", and 12". Pipe shall conform to AWWA C-900. PVC pipe for these sizes only as approved by PWD.

D. Approved Manufacturers:

1. J-M Manufacturing - Blue Brute

2. Certainteed – Yelomine

3. Victaulic – Aquamine

4. IPEX – Blue Brute

2.14 RESILIENT SEATED GATE VALVE

A. Valve shall meet the latest revision of the AWWA C-509 Standard.

B. Valve shall have a smooth unobstructed water way which shall be a minimum diameter of the valve.

C. Valve ends to be specified and shall be furnished with Cor-ten (or equal) bolts and nuts.

D. Valve shall be rated for zero leak rate at 200 psi differential working pressure and have a 400 psi hydrostatic test for structural integrity.

E. Sealing - Valve shall have a minimum of 2 "O" rings situated such that the "O" rings above the thrust collar can be replaced with the valve under pressure and in the open position.

F. Valve stem shall:

1. open right with a stem nut made of grade D,E manganese bronze

2. non-rising

3. include a thrust collar integrally cast to the stem

4. include with two (2) thrust washers, placed one above and one below the stem thrust collar

5. constructed of grade D,E manganese bronze

6. such that the thrust washers are made of a synthetic polymer with physical properties required

G. The body, including the stuffing box and the bonnet, shall be constructed of cast iron or ductile iron, meeting the latest revision of AWWA C-153

H. Wedge shall be constructed of ductile iron (less guiding mechanism), fully encapsulated and permanently bonded with a resilient elastomer, constructed such to allow the flushing of any interior exposed surface during operations.

I. Coatings

1. internal and external valve body, including the stuffing box, bonnet, and interior of the wedge shall be fusion bonded epoxy coated with 8 mils D.F.T.

2. interior shall meet latest version of AWWA C-550

3. shall be holiday free, interior and exterior, per testing method described in AWWA C-550, Sec. 5.1

J. Operating nut shall be two inch (2") square ductile iron with a countersunk hold down nut (made of 316 stainless steel or silicone bronze), for tapered stems. Or, a stainless steel pin inserted through the stem for full diameter stems.

K. Bolts – The seal plate and bonnet bolts shall be stainless steel (Type 316 or Type 304)

L. Valves 12" nominal diameter and smaller shall be directly operated by the nut on the valve stem and mounted vertically. Number of turns to open or close shall closely match the formula: (3 x D) + 2. For example, a 12" valve should open or close with approximately (3 x 12) + 2 = 38 turns of the operating nut.

M. Valves larger than 12" nominal diameter shall be designed to be installed horizontally and shall have bevel gear operators driven by the operating nut. Valves 14" – 24" nominal diameter shall have 4:1 bevel gear operators. Valves with 30" – 36" nominal diameters shall have 6:1 bevel gear operators and valves with 42" – 48" nominal diameters shall have 8:1 bevel gear operators. Number of turns to open or close shall closely match the formula: ((3 x D) + 2) times the bevel gear ratio. For example, a

24” valve should open or close with approximately ((3 x 24) + 2) x 4 = 296 turns of the operating nut.

N. Contractor may be required to supply a valve for inspection and determination of coating process.

O. Approved Manufacturers

1. U.S.P.

2. AFC Series 2500

3. Mueller A-2360/61/62

4. Clow Series F6100

2.15 BUTTERFLY VALVE

A. Butterfly valves and their operators shall conform generally, to AWWA standard C504, short body pattern Class 150B.

B. The valve shafts shall be in two parts, inserted from each side of the valve. The disc pins or bolts shall be fastened to prevent loss, loosening in service, and shall be sealed as necessary to prevent leakage through the disc. Valve shafts shall be stainless steel. Carbon steel shafts with stainless steel journals are not permitted. Shaft seals shall be the “O” ring type or self adjusted packing.

C. The valve disc shall be cast of either ductile iron or alloy iron and epoxy coated. The disc periphery shall be accurately machined or faced to form a 360 degree seating surface uninterrupted by shaft holes. The disc and shaft geometry shall be such that the seat rubber is not compressed when the valve is fully open.

D. The natural rubber, insert type valve seat shall be mechanically retained in place, independent of cementing or bonding agents. The mating seat material shall be stainless steel.

E. The stub shaft of all valves 16” and larger shall have a two way thrust bearing adequate to hold the disc centered in the valve seat.

F. The valve operators shall be manual, totally enclosed, grease packed, and of traveling nut and lever design. The gear housing shall be suitable for buried and submerged service; special provisions shall be made to seal the gear housing from water infiltration from the ground or along the valve shaft into the housing. The space between the valve body and the gear box shall be one iron casting designed so as to provide access sufficient to inspect and replace the "O” ring seals. Operating stems shall be fitted with standard AWWA 2” square operating nuts. All valves shall turn to the <u>RIGHT</u> to open.

G. The internal and external valve body shall be epoxy coated to C-550 with a minimum of 5 mils dry film thickness.
H. Seal plate and end cover bolts shall be 304 stainless steel, and valve ends as specified will be furnished with Cor-Ten, or equal, bolts and nuts.

I. Approved Manufacturers

a) Henry Pratt "Groundhog" Class 150 B
b) Mueller: "Lineseal III" Class 150 B
c) Clow / M&H / Kennedy Class 150 B

2.16 RESTRAINED JOINT GASKETS

A. Restrained joint gaskets in the Portland Water District distribution system shall be rated in accordance with the performance requirements of ANSI/AWWA C111/A21.11.

B. Required applications:

1. Any hydrant branch or service with a distance greater than 18' shall have an approved restrained joint gasket in the bell ends.

2. Where a casing is required, all joints within the casing shall have an approved restrained joint gasket unless restrained joint pipe is used.

3. At any time as required by the Owner or MTA Resident.

4. Any live service tap where there is a joint between the connection and the end of the service

C. Approved Manufacturers

1. American Fast-Grip Gasket – American Pipe

2. Field Lok 350 Gasket – US Pipe

2.17 SERVICE BOX AND ROD

A. Service box

1. Shall be 1.0" Schedule 40 steel pipe with top having 1.0" N.P.T. pipe threads for screw-on cover or coupling.

2. Shall be Erie style with 6' slide-type riser.

3. Any extension of a service box requires a threaded merchant coupling with no set screw.

B. Cover

1. Shall be Quincy type (heavy duty) cover that screws on Service Box (1.1 above)

2. Shall be tapped with a 1" rope thread with a solid brass plug with pentagon operating he

C. Service box foot piece

1. The standard foot piece shall be heavy duty (Ford style or equal) cast iron design.

2. The large, heavy-duty foot piece shall have an arch that will fit over 2" ball-valve curb stop

D. Service Rod

1. Shall have a self-aligning design

2. 36" length for all services

3. 24" length for air valves

4. Shall be round and constructed of stainless steel (304) with an epoxy coating (minimum 4 mil D.F.T.)

5. Shall have a yoke design that is an integral part of the rod

6. The curb-stop attachment pin shall be a brass cotter pin

7. The rod "wrench-flat" shall have a minimum thickness of ¼" tapered to 1/16" and width of 5/8" or ½".

8. Diameter:

a. ½" for ½", ¾", and 1" services

b. 5/8" diameter for 1 ½" and 2" service

2.18 SERVICE SADDLE

A. The service saddle shall have the "larger sized" body, the same as associated with the "service repair" saddle, which shall have a minimum diameter of 6 in. and multiple "O" ring type sealing.

B. The saddle body shall be constructed of epoxy coated ductile iron.

C. The sealing gasket(s) shall be either Buna-N rubber or SBR rubber (ASTM D2000).

D. Service saddles shall be installed with all 1 1/2” and 2” corporation stops (cc only).

E. Approved Manufacturers:

Size	Tap	Saddle
2” – 2-1/4”	¾”, 1” cc	Smith-Blair 315, Ford FC 202
4” - 12” D.I.	¾”- 11/2” cc	Smith Blair 331
4” - 12” D.I.	2” cc	Smith-Blair 313
16”	¾”-2” cc	Smith-Blair 313
20” – 36”	¾”-2”cc	Smith-Blair 366

F. PVC Pipe: Stainless steel straps will be used on saddles on C-900 PVC Pipe

1. Approved Manufacturers:

Size	Tap	Saddle
2” – 2-1/4”	¾”, 1” cc	Smith-Blair 315, Ford FC 202
4”-12”		Smith-Blair 265

2.19 STAINLESS STEEL REPAIR CLAMP

A. The sleeve shall be of full circle design, either one piece or two piece, for pipe sizes 2” thru 12”

B. Body: Shall be 18-8 stainless steel shell.

C. Gasket: Shall be full length and diameter of the body size. This gasket shall form a multiple O-ring, or grid, sealing barrier for the entire length and circumference. Shall be virgin SBR rubber (ASTM D2000 AA 415)

D. Lugs, sidebar, and lifting bar shall be heavy gauge 18-8 stainless steel with TIG/MIG welding and chemical passivation of all welds.

E. Bolts and Nuts shall be Teflon coated 18-8 heavy gauge stainless steel.

F. Armor: The armor, or bridging plate between the side bars shall be heavy gauge 18-8 stainless steel bonded to the gasket to bridge the lug area.

2.20 TAPPING SLEEVE

A. For sizes 12” and smaller tapping sleeve shall be ductile iron or approved fabricated steel.

1. Tapping sleeve shall be mechanical joint with recessed outlet flange for tapping valve.

2. Tapping sleeve shall conform to AWWA C-207, Class D, with rated maximum working pressure of 200 psi.

3. The side rubber gaskets shall be rectangular in cross-section and fit into grooved channels in the casting. These gaskets shall extend the entire length of the sleeve and shall not require cutting or trimming to match MJ end gaskets.

4. Tapping sleeve shall be AB-CD pattern to permit use of plain rubber and duck-tipped gaskets for various O.D. piping sizes.

5. Mechanical joint with accessories furnished; glands, gaskets, and Cor-Ten T-bolts and nuts or equal.

6. All flange outlet bolts shall be stainless steel (Type 304).

7. Interior and exterior to be bituminous coated with a minimum of 4 mils dry film thickness or fusion bonded epoxy coated.

8. The sleeve shall be provided with a ¾" F.I.P.T. test port and brass lug.

9. Approved Manufacturers

    a. AFC

    b. Mueller Co.

    c. US Pipe

    d. Tyler / Union

    e. Powerseal Model 3490 and 3490 MJ (Fabricated Steel)

B. For sizes 16" and larger tapping sleeve shall be fabricated steel:

1. Body and Flange - A-36

2. Coating - Fusion-bonded epoxy coating with minimum D.F.T. of 5 mils, inside and out

3. Bolts, Nuts - Stainless Steel (Type 304)

4. Gaskets – SBR

5. Flange - AWWA Class D plate flange with ANSI 150# drilling, proper recessing for tapping valves

6. Sleeves shall be provided with 3/4" F.I.P.T. test port and plug

7. Approved Manufacturers

    a. Romac FTS 420

    b. Fort FTSC

    c. Smith Blair 622

    d. JCM 412

    e. Powerseal Model 3490 and 3490 MJ (up to 24")

    f. JCM 415 or approved equal (for RCCP pipe only)

2.21 VALVE BOX

A. Material shall be cast iron or ductile iron free from defects.

B. Interior and exterior of all components shall be bituminous coated with a minimum of 4 mils dry film thickness.

C. The valve box bottom section shall be slide-type with bell-type base with bottom lip

D. The valve box top section shall be slide-type, 36 inches long (minimum). No top flange and no "bead" or bottom flange

E. The valve box cover shall be a 2" drop-type cover to fit the 7-1/4" opening of the top sectio

F. The valve box intermediate (mid) section shall be slide-type with a minimum 3" belled bottom. Base section No. 645 may be used as an alternate.

2.22 CASING SPACERS AND END SEALS

A. Casing spacers shall be non-metallic virgin polypropylene, molded in segments for field assembly without tools.

B. Spacer segments shall be boltless secured around the carrier pipe by insertion of a slide lock.

C. Clearance of top runners to top of casing should be 3" or less to allow for ease of installation of the carrier pipe. Excavate test pit and measure to confirm inside casing diameter.

D. Spacer assembly shall be Ranger II manufactured by GPT Industries or approved equal.

E. Casing ends seals shall be made of synthetic rubber. Wrap around style Model W manufactured by GPT or approved equal.

2.23 Rigid Insulation

A. Where indicated on the drawings install 2" thick rigid insulation. Several layers may be specified depending on depth of cover. Insulation shall be polystyrene and specified for buried use.

PART 3 - EXECUTION

3.01 PIPE LAYING CONDITIONS

A. Pipe shall not be laid in water, or when trench conditions or weather conditions are unsuitable for such work.

B. The interior of each pipe shall be inspected while being joined to see that the alignment is preserved and to assure that no dirt or debris has entered the pipe after laying and partial backfilling.

C. Pipe fittings and accessories shall be carefully lowered into the trench, piece by piece, by means of derrick, crane, slings and other suitable tools and equipment, in a manner such as to prevent damage to the material or to its protective coating and linings. No chain or slings shall be passed through the inside bore of any pipe or valve or fitting. Under no circumstances shall piping materials be dropped or dumped into the trench.

3.02 LAYING DUCTILE IRON PIPE

A. As soon as the excavation is completed and the existing trench bottom has been brought to the proper grade, the pipe shall be laid.

B. All pipe, before being lowered into the trench, shall be inspected inside and out. Both ends shall be cleaned and any visible dirt or debris removed from inside the pipe and the interior of all affected pipe and fittings shall be swabbed with a 5% hypochlorite solution immediately before they are installed. Care shall be taken to lay the pipe to true lines and grades as shown on the drawings.

C. Coupling holes shall be excavated so that the barrel of the pipe shall bear upon the trench bottom.

D. Blocking under the pipe will not be permitted.

E. Each section shall rest upon the pipe bed for the full length of its barrel.

F. The circular rubber gasket shall be inserted in the gasket seat provided. A thin film of gasket lubricant shall be applied to the inside surface of the gasket. Gasket lubricant shall be a solution of vegetable soap or other solution supplied by the pipe manufacturer.

G. The spigot end of the pipe shall be cleaned with an approved soap solution and entered into the rubber gasket in the bell, using care to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the seat of

the bell. Pipe which is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint.

H. Pipe shall be aligned with the preceding unit and laid so as to form a close joint with the adjoining pipe and bring the inverts continuously to the required line and grade.

I. No length of pipe shall be laid until the previous length has had sufficient material tamped about it to firmly secure it in place so as to prevent any movement or disturbance.

J. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench conditions or weather are unsuitable for such work, except by permission of the MTA resident.

K. The pipe shall be laid with the bell ends facing the direction of the laying, unless otherwise permitted by the MTA resident.

L. Joints, when made, shall be done in the manner prescribed by the manufacturer of the pipe. In the case of rubber gasket joints, these joints shall be made up in accordance with the American National Standards for the jointing of cast iron pressure pipe and fittings. (ANSI/AWWA C111/A21.11).

M. Joints of all pipes in the trench shall be completed before work is stopped; and all openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons.

N. Thrust blocks shall be used behind tees, bends, or other fittings where shown. Size shall be appropriate for soil conditions and thrust forces acting on the specific fitting.

3.03 TRENCH BOTTOM

A. Should the trench bottom contain unsuitable material, as indicated in Section 02217, Article 3.2-b, the Contractor shall over-excavate and replace with bedding material as required and authorized by the MTA resident. The quantity of unsuitable material will be measured from the bottom outside of the pipe.

B. Should ledge be encountered, it shall be removed to a depth of 6" below the bottom of the pipe, and replaced with bedding material.

3.04 CUTTING PIPE

A. All ductile iron pipe shall be cut using abrasive wheel cutter, rotary wheel hand cutter (with carbide cutter) or a guillotine pipe saw. All cuts shall be square and even with no ragged rough ends.

B. Field cut pipe lengths shall be beveled and filed to avoid damage to the gasket and facilitate making the joint.

C. When the cut end of pipe is to be used as a joint, the outside of the cut end shall be tapered back about 1/8-inch at an angle of about 30 degrees with the center line of the pipe. This shall be done with a coarse file or a portable grinder.

3.05 TEMPORARY PLUGS

A. When pipe laying is not actually in progress, the openings of pipes shall be closed by temporary watertight plugs or other accepted means.

3.06 RETAINER GLANDS

A. Install retainer glands on all mechanical joints of fittings, valves and hydrants.

3.07 POLYETHYLENE ENCASEMENT

A. Tube type polyethylene encasement shall be installed on all ductile iron pipe and fittings in accordance with AWWA Standard C105 - latest revision, Method A. Circumferential wraps of tape or plastic tie straps shall be placed at 2-ft. intervals along the barrel of the pipe.

B. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, and so forth, on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embankment material from becoming trapped between the pipe and the polyethylene.

C. The polyethylene film shall be fitted to the contour of the pipe to effect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, plastic tie straps, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.

3.08 FIELD TEST OF INSTALLED HYDRANT

A. Hydrant flow shall completely stop with no more than 200 ft. lb. of torque applied to the operating nut.

B. Failure to shut completely at no more than 200 ft. lb. of torque will be cause for rejection of that hydrant.

3.09 HIGH DENSITY POLYETHYLENE PIPE JOINTS

A. The HDPE pipe sections shall be joined on the job site using heat fusion methods. Transitions to other pipe materials shall be via heat fused polyethylene stub ends connected to an H.D.P.E. mechanical joint adaptor.

B. All heat fused joints shall be made by qualified personnel of the pipe supplier. The Contractor shall be responsible for scheduling, coordination and all costs associated with the pipe jointing.

C. Joining pipe lengths shall be performed using equipment specifically designed for heat fusion of polyethylene pipe of the sizes specified. The equipment shall have a trimming mechanism to produce a clean, flush surface perpendicular to the pipe wall at all joints and a Teflon coated heating plate to prevent adhesion of the pipe to the plate. Pipe ends shall be clean and free of polyethylene trimmings, dirt or other deleterious material prior to fusing.

D. The heat fusion process shall be performed in full accordance with the pipe manufacturer's recommendations. Pipe joining equipment shall monitor pressure and heating plate temperature to insure proper jointing.

-- END OF SECTION --

SECTION 02593 – PRESSURE AND LEAK TESTING OF HDPE WATER MAINS

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment gages and related items necessary to complete all pressure and leakage tests of all water mains.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PRESSURE AND LEAKAGE TEST

A. After the pipe has been laid and backfilled, it shall be pressure tested and tested for leakage in the presence of the MTA resident and/or the Owner. Following acceptance of the pressure and leakage tests, the new mains shall be thoroughly cleaned by flushing and shall be disinfected by chlorination per Section 2595.

B. All tests shall be conducted at a time and in a manner to minimize as much as possible any interference with the operation of the existing water system. The Owner will supply all water necessary for testing and placing the lines in service. The Contractor shall supply all labor, materials and equipment necessary to make any necessary connections to the water system and to carry out the tests.

C. The Contractor shall provide a corporation tap (or use blow off assembly) for pressure and leak testing and chlorination as directed by the MTA resident. The Contractor is responsible for all work associated with the excavation, including proper trench protection, barricades, traffic control and proper backfilling and compaction upon successful completion of the test.

D. Each section of pipe shall be slowly filled with water and all air expelled from the pipe. If permanent air vents are not located at all high points, Contractor shall install corporation stops at such high points to bleed off air as the line is filled with water.

E. A pressure test pump will be connected to the new main at the testing point. The pressure will be slowly increased to 150 psi. The 150 psi test pressure shall be

maintained for four hours by adding water as necessary. The pump will then be shut off and the test pressure reduced to 140 psi. If the pressure remains steady (about 5%) for one hour, no leakage is indicated.

F. If any test discloses leakage greater than that specified above, the Contractor shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance.

B. Final acceptance of the lines will not occur until satisfactory tests have been passed.

-- END OF SECTION --

SECTION 02594 – PRESSURE AND LEAK TESTING OF DI WATER MAINS

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, gages and related items necessary to complete all pressure and leakage tests of all ductile iron (DI) water mains.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PRESSURE AND LEAKAGE TESS

A. After the pipe has been laid and backfilled, it shall be pressure tested and tested for leakage in the presence of the MTA resident and/or the Owner.

B. All tests shall be conducted at a time and in a manner to minimize as much as possible any interference with the operation of the existing water system. The Owner will supply all water necessary for testing and placing the lines in service. The Contractor shall supply all labor, materials and equipment necessary to make any necessary connections to the water system and to carry out the tests.

C. The Contractor shall excavate and provide a corporation tap for pressure and leak testing as directed by the MTA resident. The Contractor is responsible for all work associated with the excavation, including proper trench protection, barricades, traffic control and proper backfilling and compaction upon successful completion of the test.

D. The pipe shall be slowly filled with water and all air expelled from the pipe. If permanent air vents are not located at all high points, Contractor shall install corporation stops at such high points to bleed off air as the line is filled with water.

E. A pressure test pump will be connected to the new main at the testing point. The pressure will be slowly increased to 150 psi and allowed to stabilize (+/-2.5 psi) for a minimum of 15 minutes.

F. A reservoir of potable water shall be connected to the test pump and the initial level of water recorded.

G. The pump pressure shall be maintained at 150 psi for one hour with all make up water withdrawn from the reservoir.

H. After one hour, the water level in the reservoir will be measured and the volume of water drawn from the reservoir calculated and compared with the following allowable leakage:

$$\text{Allowable Leakage (gph)} = \frac{\text{Pipe Length (feet)} \times \text{Nominal Diameter (inches)}}{10{,}876^*}$$

*Correct only for 150 psi test pressure

I. If any test discloses leakage greater than that specified above, the Contractor shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance:

J. Final acceptance of the lines will not occur until satisfactory tests have been passed.

-- END OF SECTION --

SECTION 02595 – DISINFECTION OF WATER MAINS

PART 1 - GENERAL

1.01 SCOPE

A. Furnish all labor, materials, equipment, and incidentals necessary to disinfect the distribution system.

B. Do not disinfect water mains until pressure and leakage testing is completed, see Section 02594.

PART 2 - PRODUCTS

2.01 MATERIALS

L. The Contractor shall chlorinate the new main in accordance with the continuous feed method specified in Section 5.2 of AWWA Standard C651-latest revision, using 5% to 15% sodium hypochlorite solution.

M. The Contractor may use calcium hypochlorite granules or tablets placed in the new mains during installation in accordance with Section 5.1 of AWWA Standard C651-latest revision, as a supplement to the continuous feed method.

PART 3 - EXECUTION

3.01 DISINFECTION

A. Upon satisfactory completion of the pressure and leak test, all new water mains shall be disinfected before they are placed into service in accordance with Section 5.2 of AWWA Standard C651-latest revision and the procedures specified herein.

3.02 FLUSHING

A. Section of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. If no hydrant is installed at the end of the main, then a suitably sized tap should be provided.

B. All taps required by the Contractor for chlorination or flushing purposes, or for temporary release of air, shall be provided by him as part of the construction of the water main.

C. Flushing shall proceed for 4 hours at a flow velocity of 2.5 feet per second.

3.03 REQUIREMENTS OF CHLORINE

A. Before being placed into service, the main shall be chlorinated so that a chlorine residual of not less than 10 parts per million remains in the water after standing 24 hours in the pipe. Chlorine residual at start of test shall be at least 25 parts per million.

3.04 POINT OF APPLICATION

A. The preferred point of application of the chlorinating agent is at the beginning of the pipeline or any valved section of it and through a corporation stop inserted in the pipe. The water injector for delivering the chlorine solution water into the pipe should be supplied from a tap made on the pressure side of the gate valve controlling the flow into the pipeline extension. Alternate points of application may be used when accepted or directed by the MTA resident.

3.05 RATE OF APPLICATION

A. Water from the distribution system, or other source of supply as accepted by the MTA resident, shall be controlled to flow very slowly into the newly laid pipeline during application of the chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the newly laid pipe that the dosage applied to the water will be sufficient at achieve at least 25 parts per million unless otherwise directed by the MTA resident.

3.06 PREVENTING REVERSE FLOW

A. Valves shall be operated by the Owner so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used, if desired.

3.07 RETENTION PERIOD

A. Treated water shall be retained in the pipe at least 24 hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least 10 parts per million.

3.08 CHLORINATING VALVES AND HYDRANTS

A. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

3.09 FINAL FLUSHING AND TESTING

A. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its length shows, upon tests, that the residual chlorine is not in excess of that to be carried in the system.

B. After flushing, water samples collected from the treated piping system as directed by the MTA resident, shall show satisfactory bacteriological results. Bacteriological analyses shall be performed by the Owner.

C. Chlorine residual of water being flushed from the newly laid pipe following chlorination must be neutralized by treating with one of the chemicals listed in the table below.

D. Amounts of chemicals required to neutralize various residual chlorine concentrations in 100,000 gallons of water*

Residual Chlorine Concentration (mg/L)	Sulphur Dioxide	Sodium Bisulfate	Sodium Sulfite	Sodium Thiosulfate
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
25	20.9	31.3	36.5	30.3

*Except for residual chlorine concentration, all amounts are in pounds.

3.010 REPETITION OF FLUSHING AND RESULTS

A. Should the initial disinfection process result in an unsatisfactory bacterial test, the original chlorination procedure shall be repeated by the Contractor.

B. If after the third re-chlorination attempt satisfactory results are not obtained, the Contractor shall submit for review and approval a foam pigging plan. The submittal shall include but is not limited to details and sketches showing point of entry, retrieval, pigging sub-contractor, and pigging subcontractor qualifications and experience. Work on pigging shall not commence until the submitted plan and proposed subcontractor are approved in accordance with Section 01300 Submittals. Pigging shall be provided at no additional expense to the Owner.

1. Polyurethane pigs shall be new and will be not be reused. The pig shall be immersed in a 25 mg/l solution of sodium hypochlorite prior to launching. The pig shall be pushed through the main with water pressure.

2. A minimum of three new pigs and three pig launching/flushing shall be completed by the Contractor.

3. The third pig shall be inspected by the Owner and examined for any residue. At the sole discretion of the Owner, additional new pig launching and flushing shall be provided by the Contractor until a residue-free pig is produced.

4. Following approval to conclude the pig launching and flushing process a final bacterial test shall be provided. If satisfactory results are not obtained, the pig launching and flushing process shall be repeated until a satisfactory result is obtained at no additional expense to the Owner.

-- END OF SECTION --

SPECIAL PROVISION
SECTION 609
STRUCTURAL CONCRETE
(Concrete Slipform Curb)

609.01 – Description This work shall consist of furnishing and placing a Portland cement concrete pavement and incidental construction as shown on the plans, or as directed by the Resident. Except as otherwise specified in this Special Provision, all work shall conform to the applicable provisions of Section 609 - Structural Concrete Slipform Curb, and Section 515 - Protective Coating for Concrete Surfaces.

609.02 – Materials Concrete shall be Class A. Concrete for slipform curb will all requirements under Standard Specifications, Section 502.05, with the exception that chloride permeability will be waived. This includes a minimum compressive strength of 4350 psi. Entrained air will meet current requirements of 6 – 8.5%. Depending on aggregate source proposed for use, the ASR requirement will be enforced and may require a pozzolan addition to the mix.

Type 6 – Concrete Slipform Curb

a. Installation Concrete shall be placed with an approved slipform machine that will produce a finished product according to the design specified in the plans, and will meet the same standards set for cast-in-place curb. For cold weather slipforming, the outside temperature must be at least 36°F and rising. The curb shall be placed on a firm, uniform bearing surface, shall conform to the section profile specified in the plans, and shall match the appropriate grade. Proper curing shall be insured through the use of a spray-applied pigmented curing compound that meets the requirements of AASHTO M 148, Type 2 Liquid Membrane-Forming Compounds for Curing Concrete. Expansion joints will be provided at ends of curve radii or wherever the curb meets rigid structures, such as building foundations or fire hydrants. Contraction joints will be placed at 10 foot intervals using sawing methods. Contraction joints shall be cut 1-3" into the concrete. Joints shall be constructed perpendicular to the subgrade and match other joints in roadways, sidewalks, or other structures when applicable. Construction joints will be used at the end of a day's construction, or when the placement of concrete is interrupted by more than 30 minutes. The use of an insert bar to create a plane of weakness will not be permitted; control joints will be used.

Terminal curb will be installed according to the Special Details enclosed.

b. Control Joints Control joints are partial depth and are used to create a plane of weakness in the concrete to control the location of drying shrinkage cracks.

c. Isolation Joints Isolation joints are full depth and are used to prevent cracking due to differential movement.

d. Construction Joints Construction Joints are full depth and are used at the end of a day's construction, or when the placement of concrete is interrupted by more than 30 minutes.

e. Backfilling Will be in accordance with Standard Specifications, Section 609.03 (b).

f. Protection Will be in accordance with Standard Specifications, Section 609.03 (c). In addition, the following will apply:

Slipform curb must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required temperature of 36°F after placement, curb shall be protected by concrete blankets or a combination of plastic sheeting and straw. After any placement of slipform curb, regardless of weather conditions, the placed curb shall be adequately protected by traffic control devices and flagging as necessary.

g. Finishing Membrane curing compounds shall be a Type 2, white pigmented product selected from the Department's Qualified Product List of Concrete Curing Compounds.

Curing compound will be applied in two applications immediately after the final finishing. The second application will be perpendicular in direction to the first application to ensure complete coverage.

Any voids or surface irregularities shall be repaired using the concrete grout from the same concrete load and a float shall be used on the repaired areas.

All edges of concrete shall be rounded with an approved edging tool while the concrete is still plastic and shall leave a true smooth surface.

The contractor shall be responsible for the maintenance of the curb and gutter until completion and acceptance of the project.

h. Repair and Replacement Any curb or gutter which does not conform to the specifications shall be repaired and or replaced as directed by the Department.

If the repair and replacement results in the need for repairs and adjustments to the materials adjacent to the curb and gutter, the Contractor shall carry out the repairs and adjustments at his own expense and to the satisfaction of the Department.

609.09 Method of Measurement Concrete Slipform Curb, satisfactorily placed and accepted, will be measured for payment by the foot, in accordance with the dimensions shown on the plans or authorized by the Resident.

Terminal curb will be measured by the unit.

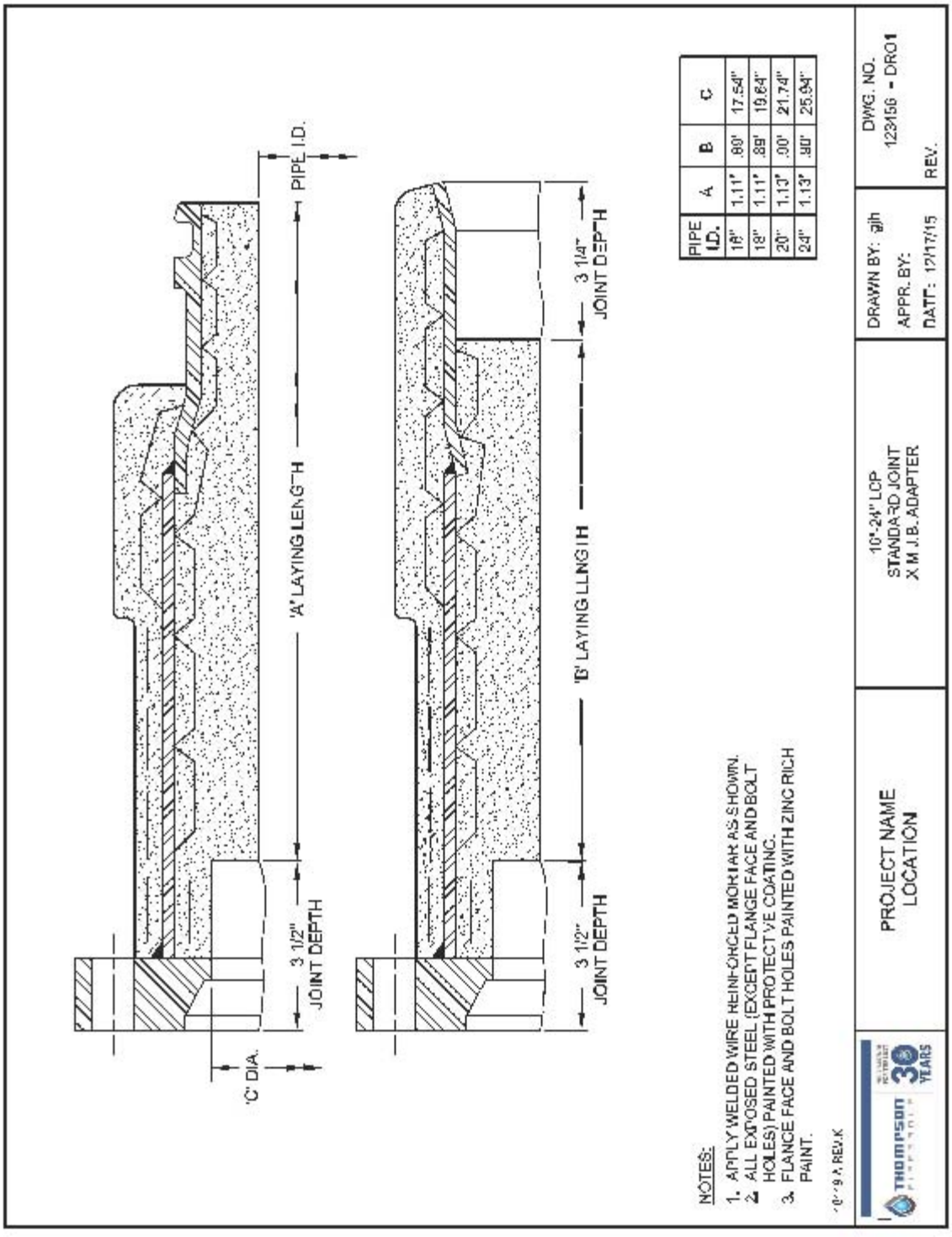
609.10 Basis of Payment The accepted quantity of Concrete Slipform Curb will be paid for at the contract unit price per foot, complete in place. This price shall be full compensation for all labor, materials, equipment, and incidentals necessary to complete the work. This includes the furnishing and the application of the protective coating; the fabrication, delivery, and

placement of dowels; furnishing and placement of control joint strip and sealant and the cutting of control joints, isolation joints and construction joints. Preparation of the existing surface and any necessary excavation prior to the placement of curb will not be paid for directly, but will be considered incidental to curb items.

Payment for terminal curb shall include only that portion of the curb modified for installation at ends of curb runs as shown in the Special Details. The price shall be full compensation to complete the work, as stated above.

Payment will be made under:

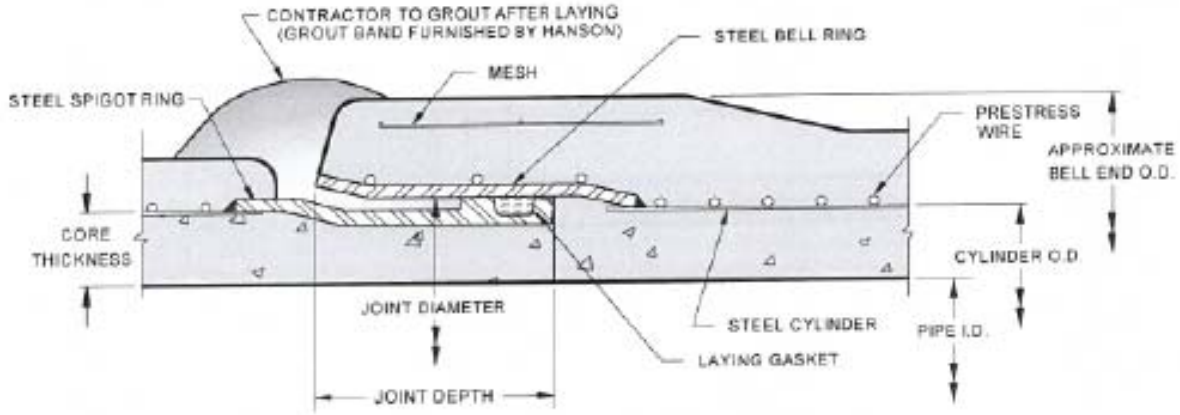
Pay Item	Pay Unit
609.21 Concrete Slipform Curb	LF
609.214 Concrete Slipform Curb - 4’ Terminal End	Each
609.218 Concrete Slipform Curb - 8’ Terminal End	Each


'C' DIA.
3 1/2" JOINT DEPTH
'A' LAYING LENGTH
PIPE I.D.
3 1/2" JOINT DEPTH
'B' LAYING LLNGTH
3 1/4" JOINT DEPTH
NOTES:
1. APPLY WELDED WIRE REINFORCED MORTAR AS SHOWN.
2. ALL EXPOSED STEEL (EXCEPT FLANGE FACE AND BOLT HOLES) PAINTED WITH PROTECTIVE COATING.
3. FLANGE FACE AND BOLT HOLES PAINTED WITH ZINC RICH PAINT.
PIPE I.D. | A | B | C
18" | 1.11' | .80' | 17.54"
18" | 1.11' | .89' | 19.64"
20" | 1.13' | .00' | 21.74"
24" | 1.13' | .90' | 25.94"
PROJECT NAME
LOCATION
10'-24" LCP
STANDARD JOINT
X M.J.B. ADAPTER
DRAWN BY: glh
APPR. BY:
DATE: 12/17/15
DWG. NO.
123156 - DRO1
REV.
THOMPSON
38 YEARS

Connecting Ductile Iron Pipe to Existing Prestressed Concrete Steel Cylinder Pipe

Connections to Prestressed Concrete Steel Cylinder Pipe (PCCP) must be made at existing bell and spigot joints. The pipe cannot be cut in mid-barrel and a connection made. Thompson Pipe Group Pressure Pipe can supply a wide range of steel adapter fittings to effect connections between PCCP and many other different pipe types.

This brochure contains information for one of the most common connection types; new ductile iron pipe to existing PCCP. For instance, the techniques described herein can be used for the insertion of ductile iron pipe and a tee fitting or the insertion of a valve and related ductile iron fittings into a PCCP line.



PIPE INSIDE DIA.	CORE THICKNESS	JOINT DIAMETER	CYLINDER OUTSIDE DIA.	APPROXIMATE WEIGHT (#/L.F.)	APPROXIMATE BELL END OUTSIDE DIA.
16	1	18 1/2	18	140	22 1/2
18	1 1/8	20 3/4	20 1/8	155	24 3/4
20	1 1/4	23	22 1/2	185	27
24	1 1/2	27 1/2	27	240	31 1/2
30	1 7/8	34 1/4	33 3/4	350	38 1/4
36	2 1/4	41	40 1/2	475	45
42	2 5/8	47 1/4	47 1/4	590	51 1/4
48	3	54	54	760	58

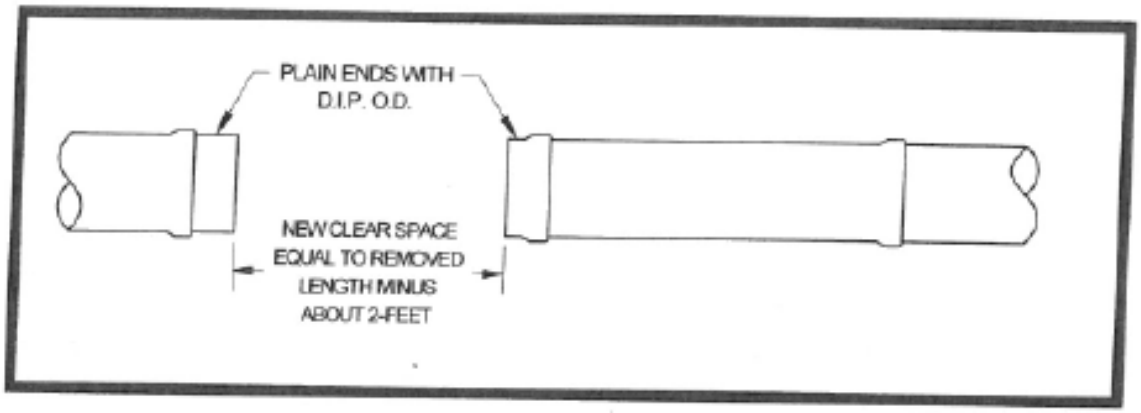
ALL DIMENSIONS IN INCHES EXCEPT AS SHOWN

Typical Cross Section of Prestressed Lined Cylinder Pipe

Thompson Pipe Group-Pressure
1003 North MacArthur Boulevard
Grand Prairie, TX 75050
Tel.: 972-262-3600 Fax: 972-266-7596
www.Thompsonpipegroup.com

Each MJS adapter fitting is supplied with an o-ring rubber gasket for the PCCP joint and a grout band. After the existing PCCP joints have been exposed, the MJS adapter fittings can be installed. Carefully inspect and then clean the joint rings of all dirt and any other debris. Apply a thin layer of vegetable soap lubricant to the joint rings and to the o-ring rubber gasket. Exposed steel on the MJS adapters are painted with a coating complying with the NSF 61 Standard for contact with potable water.

In order to keep the adapters in place while subsequent pipe installation continues, some contractors tack-weld the joints between the adapters and the existing pipe.



After the adapters have been installed, the exterior joint recesses between the adapters and the existing PCCP must be protected from corrosion by filling with portland cement grout.

The grout band for PCCP consists of a Typar synthetic fabric layer (gray in color) and a layer of closed cell foam. These layers are sewn together along with a pair of 5/8" wide steel bands at each edge which are used to secure the band to the pipe exterior. A stretching tool is used to tighten the steel bands. Once the bands are pulled tight, a steel clip is crimped around the band ends to hold them in position. It's important that the band be carefully placed against the exterior surface of the pipe to insure that it's flush with no gaps or gathers. The closed cell foam surface is to be placed against the pipe exterior. The band must be centered on the joint.

The wet grout will flow down to the bottom of the band and begin to bulge it out. It's often helpful to place some bedding material directly under the band at the bottom to support the weight of the wet grout. Take care to not push excessive amounts of bedding material under the band such that it's pushed up into the joint recess.

Thompson Pipe Group - Pressure
1003 North MacArthur Boulevard
Grand Prairie, TX 75050
Tel.: 972-262-3600 Fax:
972-266-7596
www.thompsonpipegroup.com

This will impede the flow of wet grout. For larger diameter pipe, placing the grout in several lifts is helpful. The grout is allowed to take an initial set before subsequent lifts are added.

Mix the grout using one part ASTM C150 Type 1 or Type 2 portland cement to not more than three parts clean sand with sufficient water to achieve a pourable consistency. The grout should look and pour like a thick cream. If it's too thick, it will not flow around the joint; if it's too thin, it may leak out of the band. Carefully pour the mixed grout into the gap at the top of the band. Most contractors use plastic 5 gallon buckets. A large funnel might be helpful. As the pouring proceeds, the workers should inspect the band around the joint periphery to insure that the grout is flowing all around. Once the band is full and wet grout is puddling at the gap at the top, apply a stiffer mix (perhaps the consistency of wet brick mortar) over the joint. Insure that all metal joint components have at least 1" of coverage. Then fold the band flap over the gap and allow the grout to cure.

The joint grout's primary function is to provide corrosion protection to the exposed metal components of the joint. We recommend that pipe with restrained joints not be pressurized until the joints have been grouted and the grout allowed to cure. The wet grout flows down and around the restrained joint components and can act as a variable width shim between the clamp and the harness bars and serve to transfer axial thrust forces in compression.

Backfilling operations can begin immediately after the band has been filled. When placing backfill around the filled bands, care must be taken to avoid damage to or displacement of the bands.

Tightening the Steel Bands

Pouring the Grout

Thompson Pipe Group -Pressure
1033 North MacArthur Boulevard
Grand Prairie, TX 75050
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MAINE TURNPIKE AUTHORITY

Pre-Bid Conference

CONTRACT 2019.13

EXIT 45
EMBANKMENT PRELOAD
MILE 44.9

AUGUST 6, 2019, 10:00 A.M.

1) Location:

The general limits of work are as shown on the Contract Plans at Mile 44.9.

2) General Description:

The work consists of constructing preload embankments at Exit 45 of the Maine Turnpike in the Town of Scarborough and City of South Portland, Maine. The work includes clearing, grubbing, wick drains, drainage layers, embankments, gravel, highway lighting, maintenance of traffic (including temporary ramps), and all other work incidental thereto in accordance with the Plans and Specifications.

3) Bid:

a) Opening: August 27, 2019 at 11:00 A.M. at MTA Headquarters 2360 Congress Street, Portland.

b) All bid and contractual questions shall be directed to Nate Carll. Phone No.: (207) 482-8115. E-Mail: ncarll@maineturnpike.com.

c) All questions on plans and specifications shall be in writing and shall be directed to Nate Carll, Purchasing Manager, of the Maine Turnpike Authority. Fax No. (207) 871-7739.Email ncarll@maineturnpike.com

4) Notification:

a) Contractor shall notify and obtain approval from the Authority prior to visiting the Project sites for field inspection. The contact person is Mr. Steve Tartre at startre@maineturnpike.com

5) Contract Specifications

a) The Specifications are divided into three parts: Part I, Supplemental Specifications, Part II, Special Provisions, and Part III Appendices.

b) The Maine Turnpike Supplemental Specifications are additions and alterations to the 2014 Maine Department of Transportation Standard Specifications and are available on MTA's website.

6) Maine Department of Labor – Fair Hourly Wages (Special Provision 104.3.8)

a) Contract includes "Highway & Earth" wage rates.

7) Utility Coordination (Special Provision 104.4.6)

a) Six utility facilities, five distribution facilities and one transmission facility, are present within the project site: CMP, Consolidated Communications, MCI World Communications, FirstLight, and Charter Communications. CMP transmission lines are scheduled to be relocated by December 1, 2019. All other aerial utilities are along Cummings Road and will be relocated under that project.

b) An underground waterline owned by Portland Water District crosses the Turnpike north of Cummings Road and more or less parallels the existing northeast toe of slope. A second waterline owned by Portland Water District cross the Turnpike north of the CMP transmission corridor. An underground sewer main owned by Dead River Company crossed the Turnpike just north of the second water main.

8) Cooperation With Other Contractors (Special Provision 104.4.7):

A. MTA Contract 2016.08 – Interchange 44 Barrier Toll Plaza ORT Conversion, MM 44.3

B. MTA Contract 2018.19 – Cummings Road Underpass Bridge Replacement, MM 44.6

C. MTA Contract 2019.01 – Scarborough/South Portland/Portland Mainline Pavement Rehabilitation, MM 42 – 44.3

D. MTA Contract 2019.09 – Stroudwater River Overpass Bridge Widening and Rehabilitation, MM 46.7 & MCRR Overpass Bridge Widening and Rehabilitation, MM 47.9

E. MTA Contract 2019.14 – Exit 45 - CMP Relocation, MM 44.9 to 45.3

F. MTA Contract 2020.01 – Saco/Scarborough Mainline Pavement Rehabilitation, MM 35.5 – 42.0

G. MTA Contract 2020.03 – Mainline Widening and Median Safety Improvements, MM 44 – 49.3

9) Permit Requirements (Special Provision 105.8.2)

a) The Project is being constructed under the Maine Department of Environmental Protection (DEP) Natural Resources Protection Act Tier III. Additionally, the Project impacts environmental resources that have been permitted under a Maine Turnpike Authority's Portland Area Widening project permit, which requires a DEP Natural Resources Protection Act Individual Permit. Permits are anticipated to be received by September 1, 2019.

b) The Project is being permitted under Section 404 of the Clean Water Act, through the US Army Corps of Engineers Individual Permit. Additionally, the Project impacts environmental resources that have been permitted under the Maine Turnpike Authority's Portland Area Widening project permit, which also requires a US Army Corps of Engineers Individual Permit.

c) Maine Pollutant Discharge Elimination System (MPDES) General Permit for Stormwater Discharge from Construction Activity shall be followed.

d) Limit of Disturbance Plan shall be submitted prior to any disturbance.

e) The project is within an MS4 Area and the Contractor will be required to follow and sign the MS4 Awareness and adoption plans provided in Appendix A of the special provisions.

10) Construction Schedule/Substantial Completion:

a) September 5, 2019 – Contract Award Date

b) March 31, 2020 – 1st Stage of two stage embankments complete.

c) June 30, 2020 – All single stage embankments complete.

d) 45 days after NTP for 2nd stage – Substantial Completion.

e) March 31, 2021 (or 30 days after completion of two stage embankments, whichever is later) – Contract Completion Date.

11) Incentives/Disincentives

a) This Contract will include Completion Incentives of $5,000 per day for each day the Contract is complete ahead of the Contract Completion date, up to a maximum of 15 days.

b) The Contract will also include Completion Disincentives of $5,000 per day for each day beyond the Contraction Completion date that the Contract is completed.

12) Prosecution of Work (107.4.6) & Limits of Operations (Special Provision 107.4.7)

a) No work on the Access Road shall commence until the Portland Water District has relocated and abandoned their existing 16" water main. Additionally, the Access Road may not be used to access the site without the approval of the Authority.

b) No work north of Sta. 310+45 shall commence until CMP transmission poles and line have been moved and are operational in the new location (See Section 104.4.6).

c) All culverts crossing the mainline, northbound ditching, and northbound drainage from STA. 2218+50 to STA. 2229+00 must be complete prior to starting embankment construction within existing loop ramps.

d) The Temporary Ramp D Phase 2 ramp must be open to traffic prior to constructing portions of two Stage embankments east of the Maine Turnpike.

e) Due to the presence of marine deposits, material stockpiles will not be permitted on the project site to minimize the potential for slope instability without prior approval by the Engineer. The Contractor shall spread materials delivered for embankment construction as they arrive on site.

f) Care shall be taken when working near catch basins to ensure foreign material and contaminants do not enter the basin. If foreign material and/or contaminants enter the basin, it shall be removed prior to the material exiting the basin into a waterway. Removal shall be completed to the satisfaction of the Resident and payment shall be incidental to the Contract.

g) The Contractor shall submit their proposed staging and storage areas for approval by the Resident. All stored equipment must be outside of the clear zone. Proposed equipment storage locations shall be selected based on (1) proximity to UIS/Protected Natural Resources; (2) minimizing rutting or

other actions that may hinder sheet flow from roadway; and (3) spill control and prevention, in the event of a fluid release from the equipment.

h) The Contractor shall complete the work as shown on the phasing and maintenance of traffic plans. Modifications to the phasing or associated maintenance of traffic plans will not be permitted unless approved by the Resident.

i) All roadway lanes, ramps, bridges and driveways shall remain open at all times and in accordance with the restriction of Special Provision 652 unless otherwise noted herein or approved by the Resident.

j) Ramps may not be closed on holiday weekends or weekends between Thanksgiving and Christmas.

k) The Contractor shall progress the work in a manner that minimizes disruption to the public to the extent practical.

l) The Contractor shall secure all catch basin grates with Sikaflex 1a before being allowed to shift traffic onto the shoulder. This work will be incidental to Item 652.361.

m) Temporary lane shifts, lane closures, and shoulder closures along the Maine Turnpike shall only be used during periods of activity.

n) The Exit 45 southbound off ramp will have a wide load restriction of 12 ft for the duration of this project.

13) Specific Contract Items

a) Section 209 – Wick Drains (Prefabricated Vertical Drains)

i) Pre-auguring for installation through frozen ground may be necessary; incidental to Item.

b) Section 639 – Instrumentation (Geotechnical)

i) Installation of piezometers and inclinometers to be performed by the Engineer. Contractor will pull leads and provide protection.

ii) Settlement platforms will be installed by the contractor; survey after installation to be performed by the Authority. The contractor shall provide protection of platforms. For critical locations, a barrel section of catch basin will be used in lieu of wood railing.

c) Section 652 – Maintenance of Traffic

i) Cummings Road temporary lane closure windows are 7:00PM to 7:00AM, Sunday through Thursday nights.

ii) A single weekend closure of the southbound On Ramp and Off Ramp, with an off-site detour for the purpose of installing wick drains in the existing ramps are permitted as defined in Subsection 107.4.6 Prosecution of Work. All wick drains, gravels, pavement, and barrier or guardrail must be installed prior to reopening the ramps. If approved by the Resident, Cummings Road may be reduced to a single lane of alternating one-way traffic on Saturdays

and Sunday from 7 a.m. until 7 p.m. with the exception of weekends between Thanksgiving and Christmas.

iii) Additional nightly closures may be required to shim the ramp surfaces to provide a reasonable driving surface as required by the Resident.

iv) Equipment moves across ramps will require a ramp stoppage by the state police and must be approved by the authority in advance.

v) Ramp stoppages for equipment moves will not be permitted between 6:00 a.m. and 9:00 a.m. and between 3:00 p.m. and 7:00 p.m.

vi) Maine Turnpike temporary lane closures times are included in tables in the SP's. In general daytime lane closures are not permitted.

vii) The Automated Speed Limit Sign Special Provision has been revised and the Contractor shall fill out the price in the bid form. Automated Trailer Mounted Speed Limit Signs shall only be used when a work zone speed limit is in place during temporary lane closures on the Turnpike. The Contractor shall manage the utilization and operation of the Automated Trailer Mounted Speed Limit Signs and if at least one is not used when work zone speed limits are in place on the mainline then it will be considered a Traffic Control Plan violation and result in a reduction of payment as outlined in Section 652.

viii) When a pay item for a Truck Mounted Attenuator (TMA) is included in the contract at least one TMA will be required on the project and its use will be required. The Truck Mounted Attenuator shall be utilized in lane closures and other construction operations where workers are exposed to traffic and not protected by other positive means. The Contractor shall manage the utilization and operation of the TMA and if at least one is not used as described above then it will be considered a Traffic Control Plan violation and result in a reduction of payment as outlined in Section 652. There is a culvert that will be installed across the mainline. To minimize additional efforts associated with this culvert temporary concrete barrier is not proposed between reduced speed traffic and the work area, 20,000 Lb. TMA's will be required in a tandem layout as shown on the plans.

14) Questions

Contract 2019.13
Exit 45 Embankment Preload

HNTB

SIGN-IN SHEET
Please Print

PRE-BID MEETING

August 6, 2019

Name	Company and/or Address	Phone	E-Mail
Joe Howe	HNTB	228-0882	jhowe@hntb.com
Ray Hanf	HNTB	228-0903	rhanf@hntb.com
Ralph Norwood	MTA	482-8348	rnorwood@maineturnpike.com
Matt Callahan	Glidden Excl Paving	856-9990	Mattpgliddenpaving.com
Art Burgess	Pratt & Sons, Inc	345-3311	art@prattandsons.net
Bob Brady	Shaw Brothers	838-2552	BBrady@shawbrothers.com
Sean O'Leary	RJ Grondin	400-6517	estimators@grondinconstruction.com
Steve Perry	Sargent Corp.	827-4435	sperry@sargent-corp.com PDuby@sargent-corp.com
Kevin Wiker	HB Wick Dains	410.551.1980	kwiker@haywardbaker.com
Eric Barnes	MTA	482-8374	ebarnes@maineturnp.ke.com
Steve Tartre	MTA	482-8144	Startre@maineturnp.ke.com

Date:8/13/2019

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	EMBANKMENT PRELOAD QUANTITY	WATER MAIN QUANTITY	TOTAL QUANTITY	UNIT	
201.11	CLEARING	3		3	AC	
202.15	REMOVING EXISTING MANHOLE OR CATCH BASIN	2		2	EA	
202.202	REMOVING PAVEMENT SURFACE	830	130	960	SY	1
203.20	COMMON EXCAVATION	33,400		33,400	CY	
203.24	COMMON BORROW	133,000		133,000	CY	
203.25	GRANULAR BORROW	72	400	472	CY	1
209.29	PREFABRICATED VERTICAL DRAINS	2,343,000		2,343,000	LF	
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	173,000	600	173,600	CY	1
304.14	AGGREGATE BASE COURSE - TYPE A	21	130	151	CY	1
403.207	HOT MIX ASPHALT, 19.0 mm NOMINAL MAXIMUM SIZE	170	210	380	Ton	1
403.208	HOT MIX ASPHALT, 12.5 mm NOMINAL MAXIMUM SIZE	580	25	605	Ton	1
403.209	HOT MIX ASPHALT, 9.5 mm NOMINAL MAXIMUM SIZE		55	55	Ton	1
403.212	HOT MIX ASPHALT, 4.75 mm NOMINAL MAXIMUM SIZE	1350		1350	Ton	
403.213	HOT MIX ASPHALT, 12.5 mm NOMINAL MAXIMUM SIZE (BASE AND INTERMEDIATE BASE COURSE)	790	25	815	Ton	1
409.15	BITUMINOUS TACK COAT RS-1 OR RS-1H - APPLIED	320		320	GAL	
419.30	SAWING BITUMINOUS PAVEMENT	620		620	LF	
526.306	TEMPORARY CONCRETE BARRIER, TYPE 1 - SUPPLIED BY AUTHORITY (3,000 LF)	1		1	LS	
527.341	WORK ZONE CRASH CUSHIONS - TL-3	1		1	UN	
527.3411	WORK ZONE CRASH CUSHIONS - TL-3 LEFT IN PLACE	1		1	UN	
527.3421	WORK ZONE CRASH CUSHIONS - TL-2 LEFT IN PLACE	5		5	UN	
602.30	FLOWABLE CONCRETE FILL	2		2	CY	
603.155	12 INCH REINFORCED CONCRETE PIPE - CLASS III	56		56	LF	
603.159	12 INCH CULVERT PIPE OPTION III	72		72	LF	
603.169	15 INCH CULVERT PIPE OPTION III	99		99	LF	
603.175	18 INCH REINFORCED CONCRETE PIPE - CLASS III	36		36	LF	
603.195	24 INCH REINFORCED CONCRETE PIPE - CLASS III	480		480	LF	
603.205	30 INCH REINFORCED CONCRETE PIPE - CLASS III	780		780	LF	
603.215	36 INCH REINFORCED CONCRETE PIPE - CLASS III	76		76	LF	
603.2153	42 INCH REINFORCED CONCRETE PIPE - CLASS V		40	40	LF	1
603.255	60 INCH REINFORCED CONCRETE PIPE - CLASS III	180		180	LF	
603.28	CONCRETE COLLAR	2		2	EA	
603.281	CONCRETE COLLAR FOR WATER MAIN		1	1	EA	1
604.09	CATCH BASIN TYPE BI	4		4	EA	
604.093	60" CATCH BASIN TYPE BI	2		2	EA	
604.244	CATCH BASIN TYPE F4	1		1	EA	
606.1724	BRIDGE TRANSITION - TYPE II - MODIFIED	1		1	EA	
606.278	TERMINAL END - ANCHORED END	1		1	EA	
606.352	REFLECTORIZED BEAM GUARDRAIL DELINEATOR	280		280	EA	
606.356	UNDERDRAIN DELINEATOR POST	24		24	EA	
606.3562	DELINEATOR POST - REMOVE AND STACK	60		60	EA	
606.3606	GUARDRAIL - REMOVE, MODIFY, AND RESET DOUBLE RAIL	25		25	LF	
607.09	WOVEN WIRE FENCE - METAL POSTS	650		650	LF	
607.17	CHAIN LINK FENCE 13/12 6 FOOT	1200		1200	LF	
607.23	CHAIN LINK FENCE GATE	1		1	EA	
607.32	BRACING ASSEMBLY TYPE I - METAL POSTS	8		8	EA	
607.33	BRACING ASSEMBLY TYPE II - METAL POSTS	3		3	EA	
609.21	6 INCH CONCRETE SLIPFORM CURB		65	65	LF	1
609.31	CURB TYPE 3	18		18	LF	
610.08	PLAIN RIPRAP	170		170	CY	
610.18	STONE DITCH PROTECTION	45		45	CY	
610.181	TEMPORARY STONE CHECK DAM	45		45	CY	
613.319	EROSION CONTROL BLANKET	7350		7350	SY	
615.07	LOAM	5200		5200	CY	
618.14	SEEDING METHOD NUMBER 2	420		420	UNIT	
619.1201	MULCH - PLAN QUANTITY	420		420	UNIT	
619.1202	TEMPORARY MULCH	1		1	LS	
620.58	EROSION CONTROL GEOTEXTILE	570		570	SY	
626.121	QUAZITE JUNCTION BOX (36X24)	5		5	EA	
626.122	QUAZITE JUNCTION BOX (18X11)	6		6	EA	
626.131	ADJUST EXISTING JUNCTION BOX TO GRADE	10		10	EA	
626.22	NON-METALLIC CONDUIT	100		100	LF	
627.77	REMOVING EXISTING PAVEMENT MARKING	5350		5350	SF	
627.78	TEMPORARY PAVEMENT MARKING LINE, WHITE OR YELLOW	15,300		15,300	LF	
627.812	TEMPORARY RAISED PAVEMENT MARKERS	1400		1400	EA	
629.05	HAND LABOR, STRAIGHT TIME	20	20	40	HR	1
631.12	ALL PURPOSED EXCAVATOR (INCLUDING OPERATOR)	40	20	60	HR	1
631.172	TRUCK - LARGE (INCLUDING OPERATOR)	40	20	60	HR	1
631.22	FRONT END LOADER (INCLUDING OPERATOR)	40	20	60	HR	1
631.32	CULVERT CLEANER (INCLUDING OPERATORS)	20		20	HR	
631.36	FOREMAN	40	20	60	HR	1
634.2083	REMOVE AND STACK LIGHT STANDARD	4		4	EA	
634.221	TEMPORARY HIGHWAY LIGHT	4		4	EA	

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	EMBANKMENT PRELOAD QUANTITY	WATER MAIN QUANTITY	TOTAL QUANTITY	UNIT	
639.18	FIELD OFFICE, TYPE A	1		1	EA	
639.26	INSTRUMENTATION (GEOTECHNICAL)	1		1	LS	
645.105	REMOVE AND STACK SIGN	4		4	EA	
652.30	FLASHING ARROW	3		3	EA	
652.312	TYPE III BARRICADES	10		10	EA	
652.33	DRUM	560		560	EA	
652.332	DRUM LEFT IN PLACE	170		170	EA	
652.34	CONE	50		50	EA	
652.35	CONSTRUCTION SIGNS	1850		1850	SF	
652.351	CONSTRUCTION SIGNS LEFT IN PLACE	530		530	SF	
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES	1		1	LS	
652.38	FLAGGERS	2500	100	2600	HR	1
652.41	PORTABLE-CHANGEABLE MESSAGE SIGN	8		8	EA	
652.45	TRUCK MOUNTED ATTENUATOR	20		20	CD	
652.4501	TRUCK MOUNTED ATTENUATOR - 24,000 LB	30		30	CD	
652.451	AUTOMATED TRAILER MOUNTED SPEED LIMIT SIGN	20		20	CD	
656.50	BALED HAY, IN PLACE	100		100	EA	
656.60	TEMPORARY BERMS	1800		1800	LF	
656.62	TEMPORARY SLOPE DRAINS	210		210	LF	
656.632	30 INCH TEMPORARY SILT FENCE	17,400		17,400	LF	
659.10	MOBILIZATION	1		1	LS	
802.321	CASING SPACERS - 24" HDPE		62	62	EA	1
802.322	CASING SPACERS - 36" HDPE		52	52	EA	1
822.3715	16" CLASS 52 DI PIPE PUSH ON JOINT		10	10	LF	1
822.3734	16" CONCRETE TO DUCTILE IRON ADAPTOR		1	1	EA	1
822.3755	20" CLASS 52 DI PIPE PUSH ON JOINT		780	780	LF	1
822.3758	24" DR 11 HDPE PIPE		880	880	LF	1
822.3765	30" CLASS 52 DI PIPE PUSH ON JOINT		480	480	LF	1
822.3768	36" DR 11 HDPE PIPE		760	760	LF	1
823.3402	2" BLOW OFF VALVE ASSEMBLY		1	1	EA	1
823.3411	1" AIR RELEASE VALVE		2	2	EA	1
823.3412	1-1/2" AIR RELEASE VALVE		1	1	EA	1
823.3841	20" HORIZONTAL GATE VALVE		2	2	EA	1
825.431	1-1/2" COPPER SERVICE		30	30	LF	1
827.303	UNSUITABLE MATERIAL BELOW TRENCH GRADE		400	400	CY	1

Filename: 00X_EstimatedQuantities.dgn

Scale: NOT TO SCALE

No.	Revision	By	Date
1	REVISED ESTIMATED QUANTITIES	RWH	8/19

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Raymond W. Hanf, P.E.

	By	Date		By	Date
Designed	EDD	07\19	Checked	JRH	07\19
Drawn	AJS	07\19	In Charge of	RAL	07\19

HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909

MAINE TURNPIKE

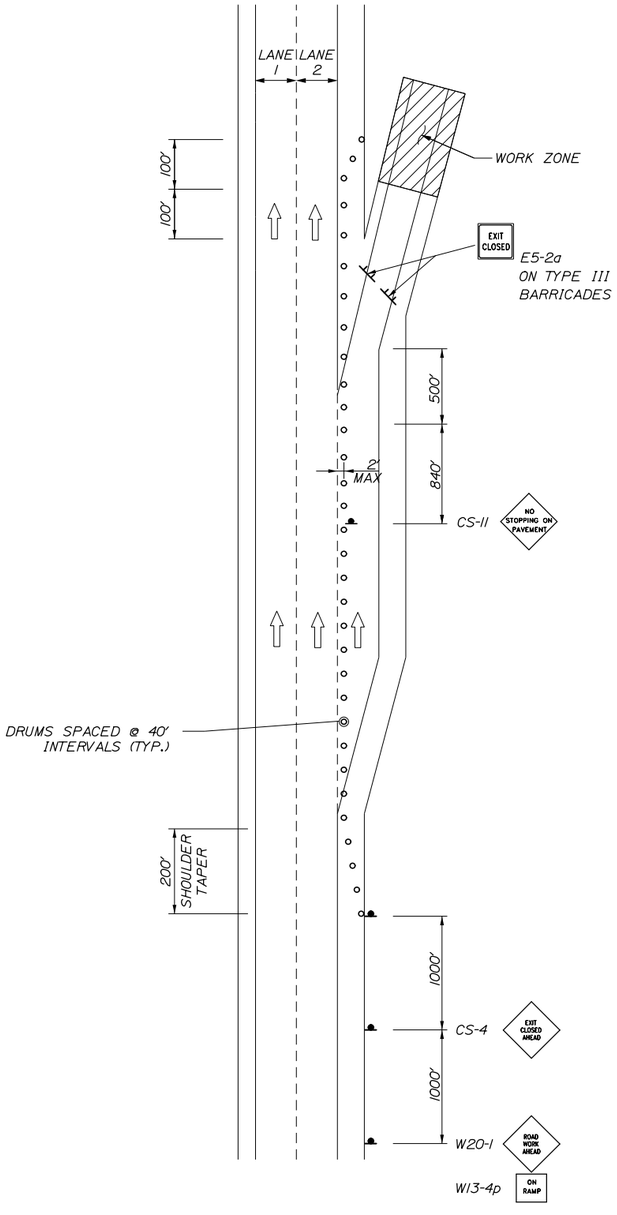
THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Ralph C. Norwood, IV, P.E., P.T.O.E.

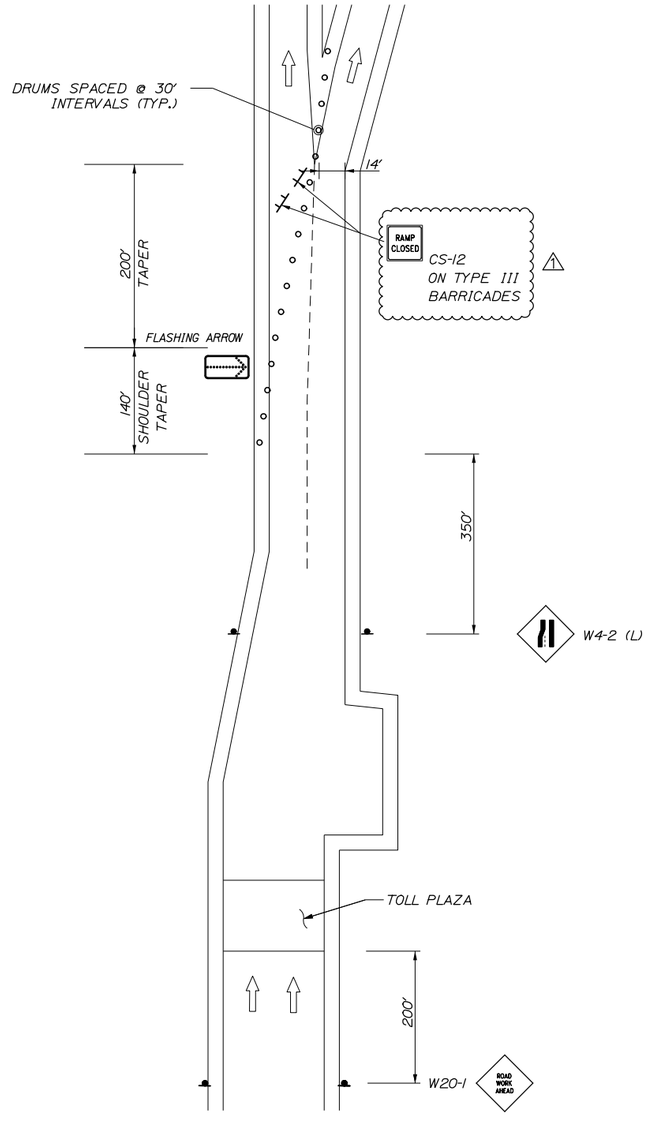
EXIT 45
EMBANKMENT PRELOAD
ESTIMATED QUANTITIES

SHEET NUMBER: EQ-01

CONTRACT:2019.13



OFF RAMP CLOSURE



ON RAMP CLOSURE

RAMP A CLOSURE SHOWN
RAMP C CLOSURE SIMILAR/OPPOSITE

NOTES:

1. FOR SIGN DETAILS, SEE SIGN SUMMARY SHEETS.
2. ALL SIGNS ARE TO BE MOUNTED ON EASELS.
3. LANE CLOSURES AT ENTRANCE AND EXIT RAMPS MAY BE COMBINED IF APPROVED BY THE RESIDENT.

Date:8/13/2019

Filename: 010_MOT Ramp ClosureDetail.dgn

Scale: NOT TO SCALE

No.	Revision	By	Date
1	REVISED SIGN	RWH	8/19

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Raymond W. Hanf, P.E.

	By	Date		By	Date
Designed	EDD	07\19	Checked	JRH	07\19
Drawn	EDD	07\19	In Charge of	RAL	07\19

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Ralph C. Norwood, IV, P.E., P.T.O.E.

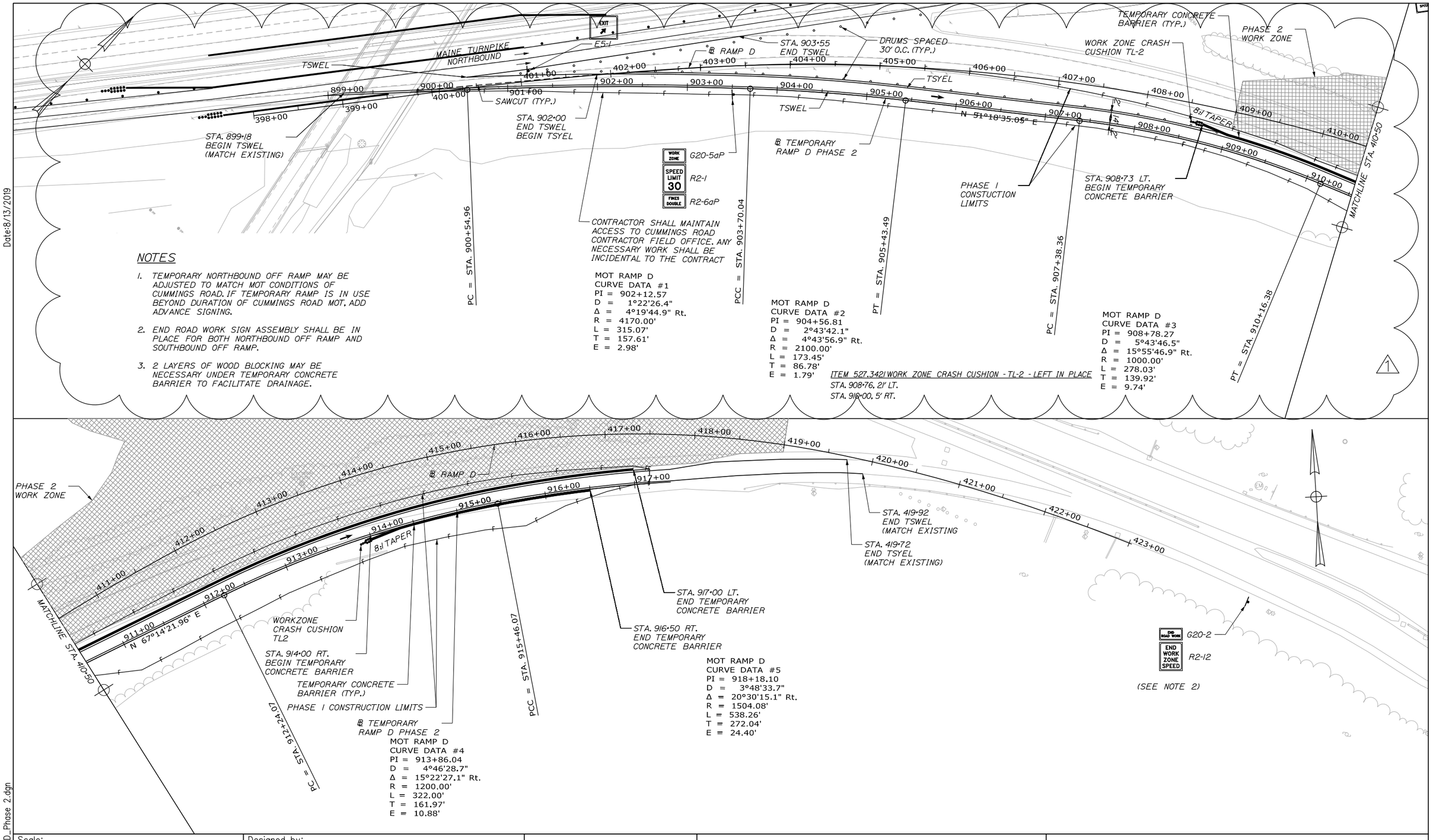
EXIT 45 EMBANKMENT PRELOAD

MAINTENANCE OF TRAFFIC RAMP CLOSURE DETAIL

SHEET NUMBER: MT-05

CONTRACT:2019.13

Date:8/13/2019



NOTES

1. TEMPORARY NORTHBOUND OFF RAMP MAY BE ADJUSTED TO MATCH MOT CONDITIONS OF CUMMINGS ROAD. IF TEMPORARY RAMP IS IN USE BEYOND DURATION OF CUMMINGS ROAD MOT, ADD ADVANCE SIGNING.
2. END ROAD WORK SIGN ASSEMBLY SHALL BE IN PLACE FOR BOTH NORTHBOUND OFF RAMP AND SOUTHBOUND OFF RAMP.
3. 2 LAYERS OF WOOD BLOCKING MAY BE NECESSARY UNDER TEMPORARY CONCRETE BARRIER TO FACILITATE DRAINAGE.

Scale: 50 0 50 100 Scale of Feet

No.	Revision	By	Date
1	REVISED RAMP D MOT STRIPING	RWH	8/19

Designed by: HNTB

CONSULTANT PROJECT MANAGER: Raymond W. Hanf, P.E.

	By	Date		By	Date
Designed	CAH	07\19	Checked	JRH	07\19
Drawn	EDD	07\19	In Charge of	RAL	07\19

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MAINE TURNPIKE

THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Ralph C. Norwood, IV, P.E., P.T.O.E.

EXIT 45
EMBANKMENT PRELOAD
MAINTENANCE OF TRAFFIC
RAMP D PLAN - PHASE 2

SHEET NUMBER: MT-22

CONTRACT:2019.13

31OF 173

Filename: 0XX_MOT Ramp D_Phase 2.dgn

CONSTRUCTION SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND BORDER	AREA IN SQUARE FEET
CS-3	48"	48"	EXPECT STOPPED TRAFFIC	TEXT DIMENSIONS SHALL CONFORM TO THE STANDARD HIGHWAY SIGNS 2004 EDITION AND 2012 SUPPLEMENT			4	ORANGE	BLACK	16.00 (64.0)
CS-4	48"	48"	EXIT CLOSED AHEAD				2	ORANGE	BLACK	16.00 (32.0)
CS-10	48"	48"	TRUCKS ENTERING				3	ORANGE	BLACK	16.00 (48.0)
CS-11	48"	48"	NO STOPPING ON PAVEMENT				4	ORANGE	BLACK	16.00 (64.0)
CS-12	48"	36"	RAMP CLOSED	8" 8"	7" 6" 7"		2	ORANGE	BLACK	12.00 (24.0)
E5-2a	48"	36"	EXIT CLOSED				2	ORANGE	BLACK	12.00 (24.0)
E5-2	48"	36"	EXIT OPEN				1	ORANGE	BLACK	12.00 (12.0)
G20-2	48"	24"	END ROAD WORK				4	ORANGE	BLACK	8.00 (32.0)
G20-5aP	48"	24"	WORK ZONE	6" 6"	4.5"		2	ORANGE	BLACK	8.00 (16.0)
R2-1 (45)	48"	60"	SPEED LIMIT 45	TEXT DIMENSIONS SHALL CONFORM TO THE STANDARD HIGHWAY SIGNS 2004 EDITION AND 2012 SUPPLEMENT			2	WHITE	BLACK	20.00 (40.0)
R2-6aP	48"	24"	FINES DOUBLE	6" 6"	4.5"		2	WHITE	BLACK	8.00 (16.0)
R2-12	48"	60"	END WORK ZONE SPEED LIMIT	TEXT DIMENSIONS SHALL CONFORM TO THE STANDARD HIGHWAY SIGNS 2004 EDITION AND 2012 SUPPLEMENT			4	WHITE	BLACK	20.00 (80.0)
W3-4	48"	48"	BE PREPARED TO STOP				4	ORANGE	BLACK	16.00 (64.0)

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND BORDER	AREA IN SQUARE FEET
W3-5 (45)	48"	48"	SPEED LIMIT 45	TEXT DIMENSIONS SHALL CONFORM TO THE STANDARD HIGHWAY SIGNS 2004 EDITION AND 2012 SUPPLEMENT			4	ORANGE	BLACK	16.00 (64.0)
W4-2 (LEFT) (RIGHT)	48"	48"					6 6	ORANGE	BLACK	16.00 (96.0) (96.0)
W7-3aP	36"	30"	NEXT X FT				11	ORANGE	BLACK	7.50 (82.5)
W13-3 (30)	36"	48"	RAMP 30 MPH				1	ORANGE	BLACK	12.00 (12.0)
W13-4P	30"	30"	ON RAMP				2	ORANGE	BLACK	6.25 (12.5)
W20-1 (AHEAD) (1 MILE)	48"	48"	ROAD WORK XXXX				8 4	ORANGE	BLACK	16.00 (128.0) (64.0)
W20-5L (1/2 MILE) (LEFT) (RIGHT)	48"	48"	LEFT LANE CLOSED ½ MILE				4 4	ORANGE	BLACK	16.00 (64.0) (64.0)
W21-5	48"	48"	SHOULDER WORK				10	ORANGE	BLACK	16.00 (160.0)
W21-5a (LEFT) (RIGHT)	48"	48"	LEFT SHOULDER CLOSED				5 7	ORANGE	BLACK	16.00 (80.0) (112.0)
W21-5b (LEFT) (RIGHT)	48"	48"	LEFT SHOULDER CLOSED 1000 FT				5 7	ORANGE	BLACK	16.00 (80.0) (112.0)
W24-1 (LEFT) (RIGHT)	48"	48"					3 2	ORANGE	BLACK	16.00 (48.0) (32.0)

Date:8/13/2019

Filename: 00X_MOT SignSummary_01.dgn

Scale: NOT TO SCALE

Designed by: HNTB

No.	Revision	By	Date
1	REVISED SIGNING	RWH	8/19

CONSULTANT PROJECT MANAGER: Raymond W. Hanf, P.E.

	By	Date		By	Date
Designed	EDD	07\19	Checked	JRH	07\19
Drawn	AJS	07\19	In Charge of	RAL	07\19

HNTB CORPORATION
340 County Road, Suite 6-C
Westbrook, ME 04092
TEL (207) 774-5155
FAX (207) 228-0909

MAINE TURNPIKE

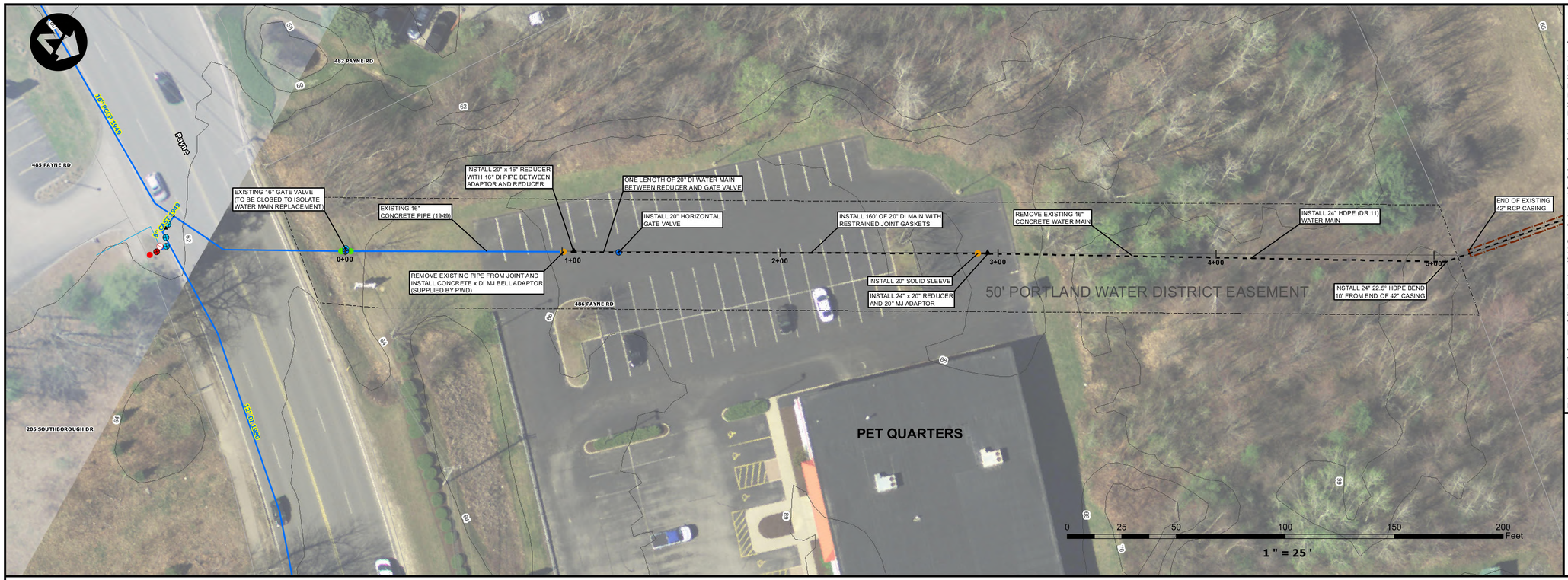
THE GOLD STAR MEMORIAL HIGHWAY

MTA PROJECT MANAGER: Ralph C. Norwood, IV, P.E., P.T.O.E.

EXIT 45
EMBANKMENT PRELOAD
MAINTENANCE OF TRAFFIC
SIGN SUMMMARY 1

SHEET NUMBER: MT-39

CONTRACT:2019.13



NOTES

1. CONTRACTOR SHALL DISPOSE OF ALL EXCAVATED PIPING AND APPURTENANCES.

2. THE PORTLAND WATER DISTRICT WILL NOTIFY CUSTOMERS FOR ALL WORK INVOLVING TEMPORARY SHUTDOWN OF SERVICE. CUSTOMERS MUST RECEIVE AT LEAST 48 HOURS NOTIFICATION PRIOR TO ANY SHUTDOWN. THE DISTRICT MUST RECEIVE NOTICE FROM THE CONTRACTOR OF THE SHUTDOWN AT LEAST 48 HOURS PRIOR TO CUSTOMER NOTIFICATION.

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5. INSTALL A MECHANICAL JOINT CAP ON ENDS OF ALL ABANDONED MAINS.

6. THE RCP CASING SHALL BE TONGUE AND GROOVE CLASS 5 IN ACCORDANCE WITH AASHTO M170. JOINTS SHALL BE SEALED WITH BUTYL IN ACCORDANCE WITH AASHTO M198.

7. SERVICE TO # 6 CUMMINGS ROAD WILL BE MAINTAINED BY KEEPING THE 16" MAIN IN SERVICE TO THE 2" BLOW-OFF AT STA 8+50 RT AS SHOWN.

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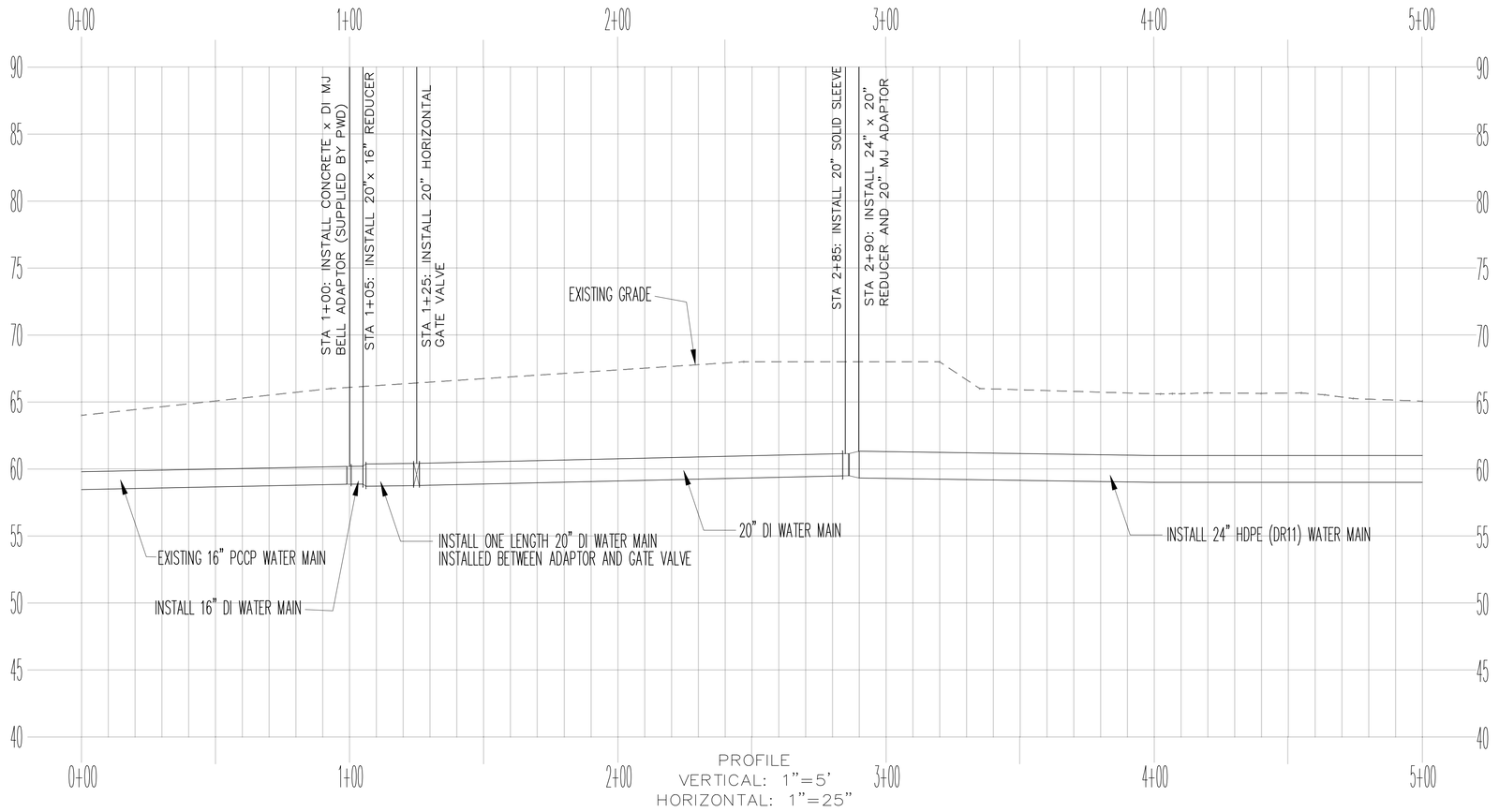
LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED/RENEWED SERVICE
- RECONNECT SERVICE



PROFILE
VERTICAL: 1"=5'
HORIZONTAL: 1"=25"

PROJECT:
437698

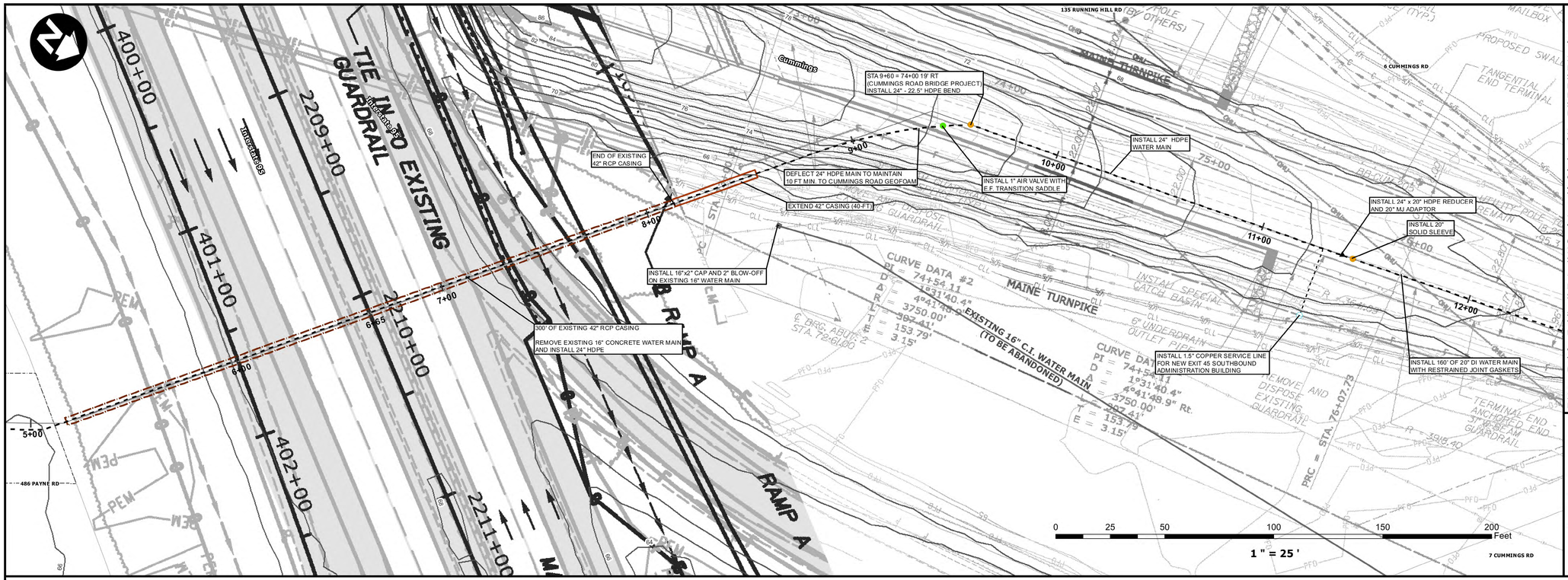
MTA CROSSING - CUMMINGS ROAD SCARBOROUGH, MAINE WATER MAIN REPLACEMENT

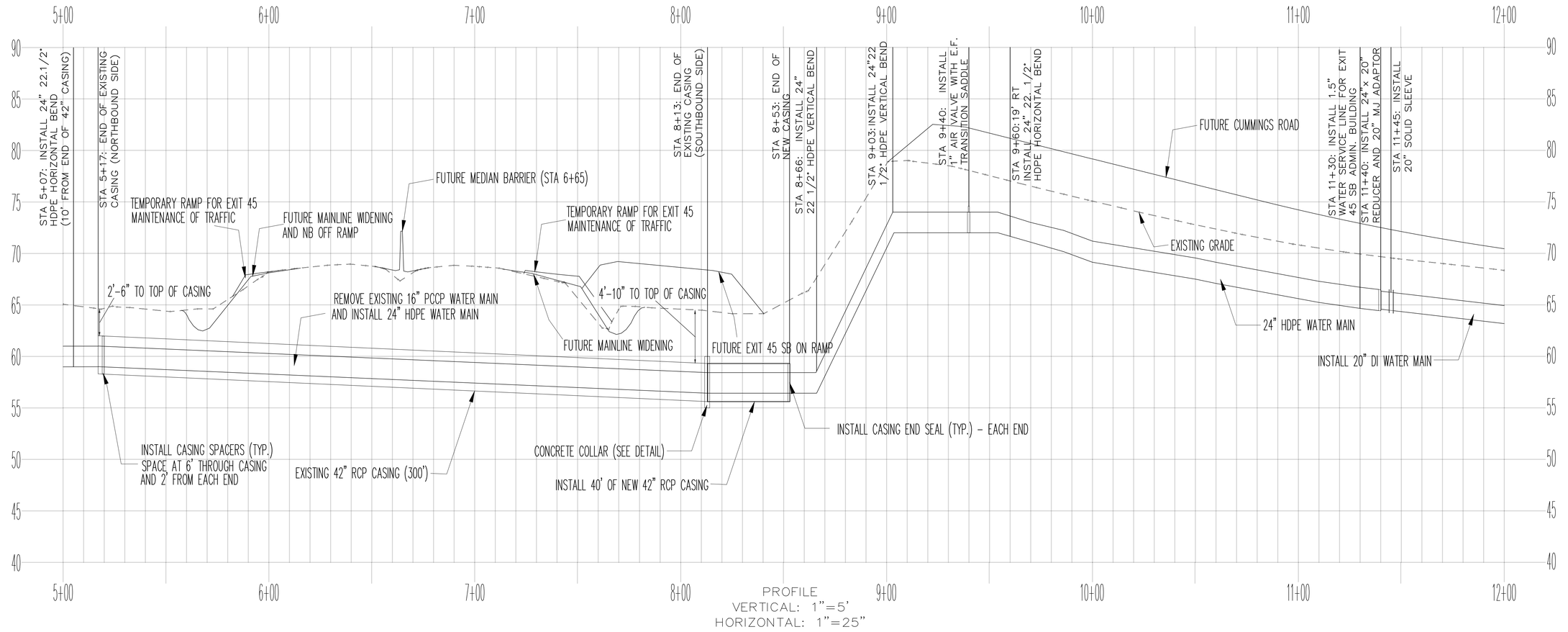
STATE OF MAINE
TIMOTHY J. MCMULLIN
3780
REGISTERED PROFESSIONAL ENGINEER

DRAWN BY: BSJ
DESIGN BY: TM
DATE: 08/08/2019

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104
(207) 774-5961 • WWW.PWD.ORG

SHEET:
1 OF 8





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- PROPOSED/RENEWED SERVICE
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PROJECT:
437698

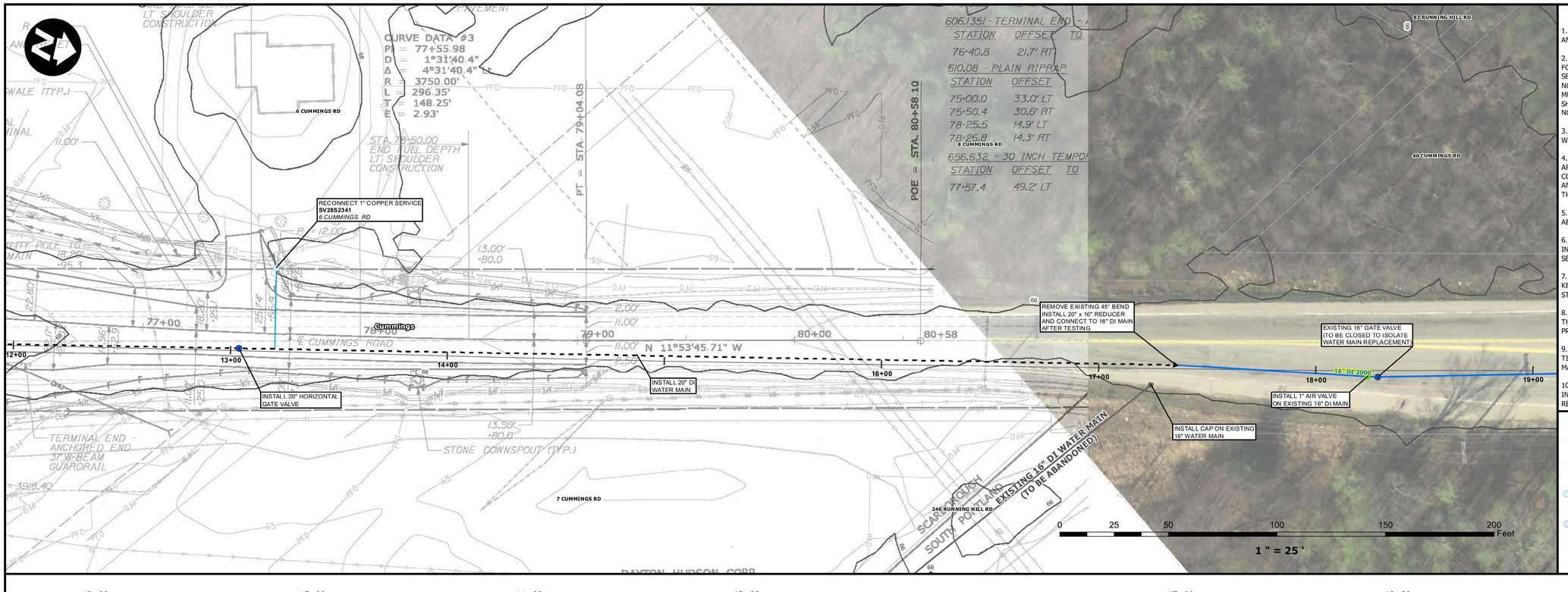
MTA CROSSING - CUMMINGS ROAD SCARBOROUGH, MAINE WATER MAIN REPLACEMENT

STATE OF MAINE
TIMOTHY J. MCMULLIN
3780
REGISTERED PROFESSIONAL ENGINEER

DRAWN BY: BSJ
DESIGN BY: TM
DATE: 08/08/2019

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104
(207) 774-5961 • WWW.PWD.ORG

SHEET:
2 OF 8



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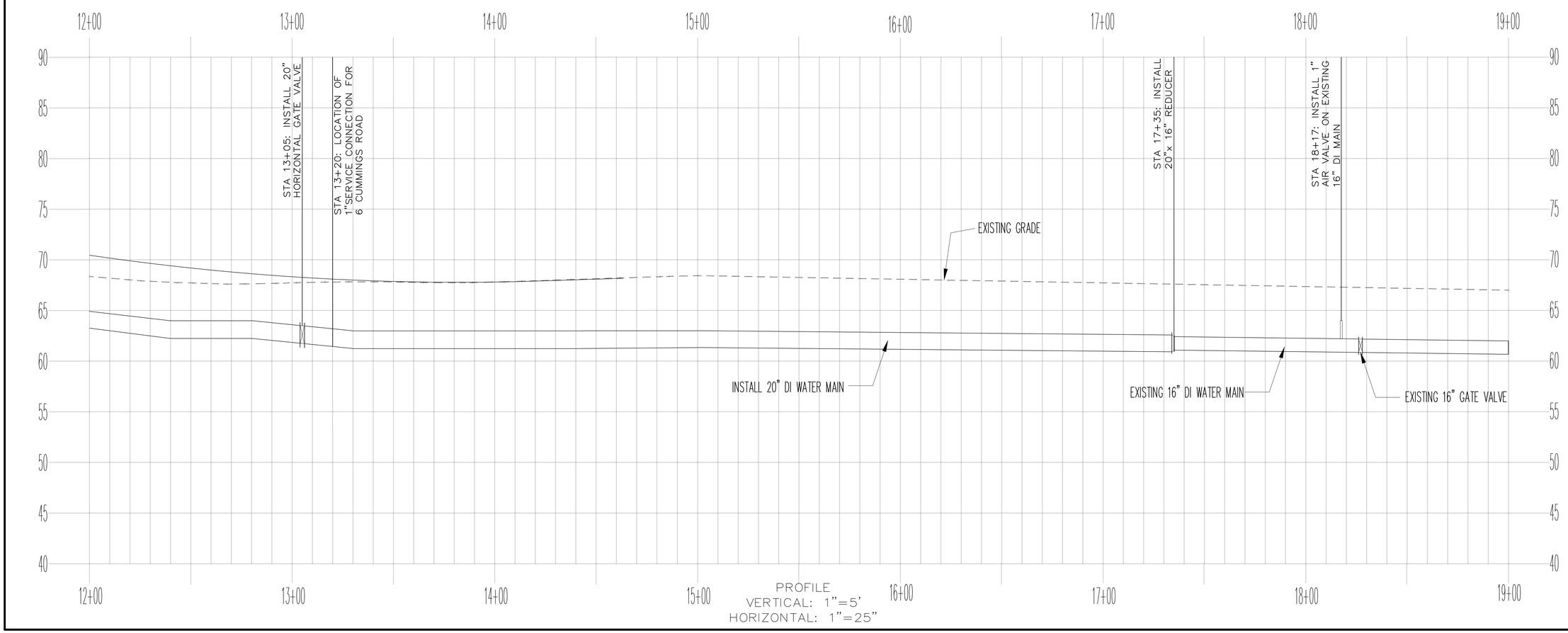


PROFILE
VERTICAL: 1"=5'
HORIZONTAL: 1"=25"

PROJECT:
437698

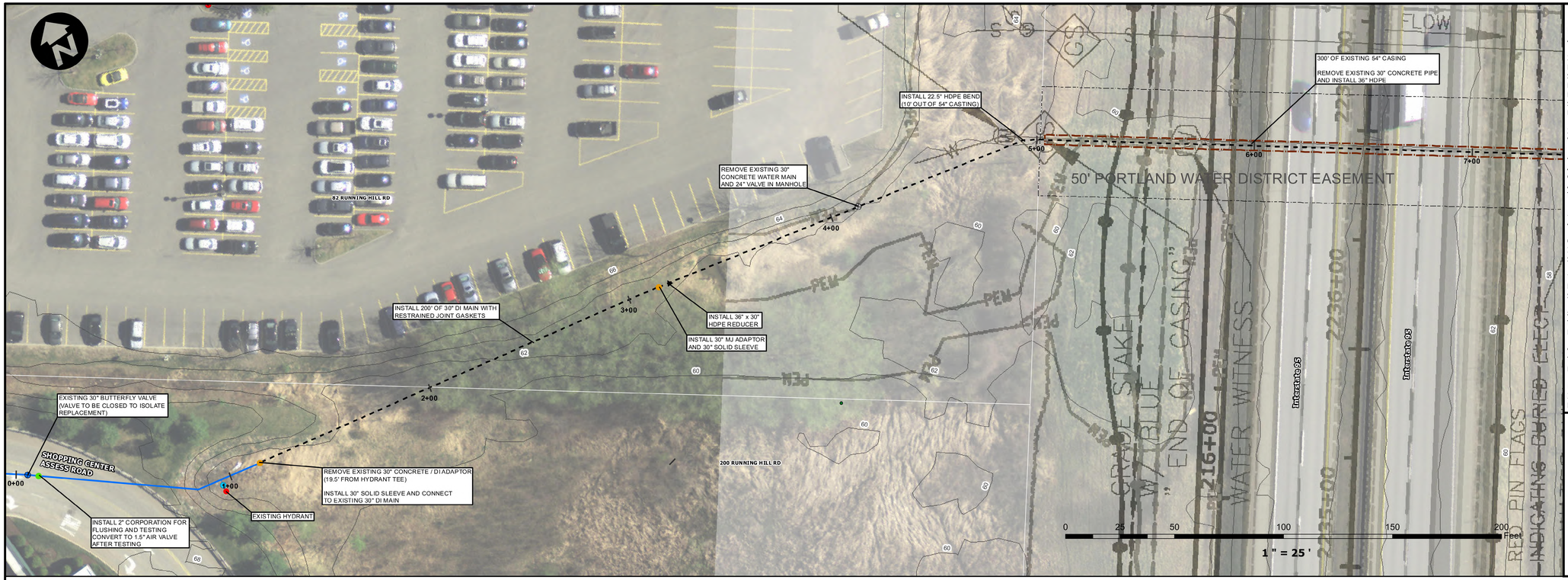
MTA CROSSING - CUMMINGS ROAD SCARBOROUGH, MAINE WATER MAIN REPLACEMENT

STATE OF MAINE · TIMOTHY J. MCMULLIN · 13180 · REGISTERED PROFESSIONAL ENGINEER

DRAWN BY: BSJ
DESIGN BY: TM
DATE: 08/08/2019

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104
(207) 774-5961 • WWW.PWD.ORG

SHEET:
3 OF 8



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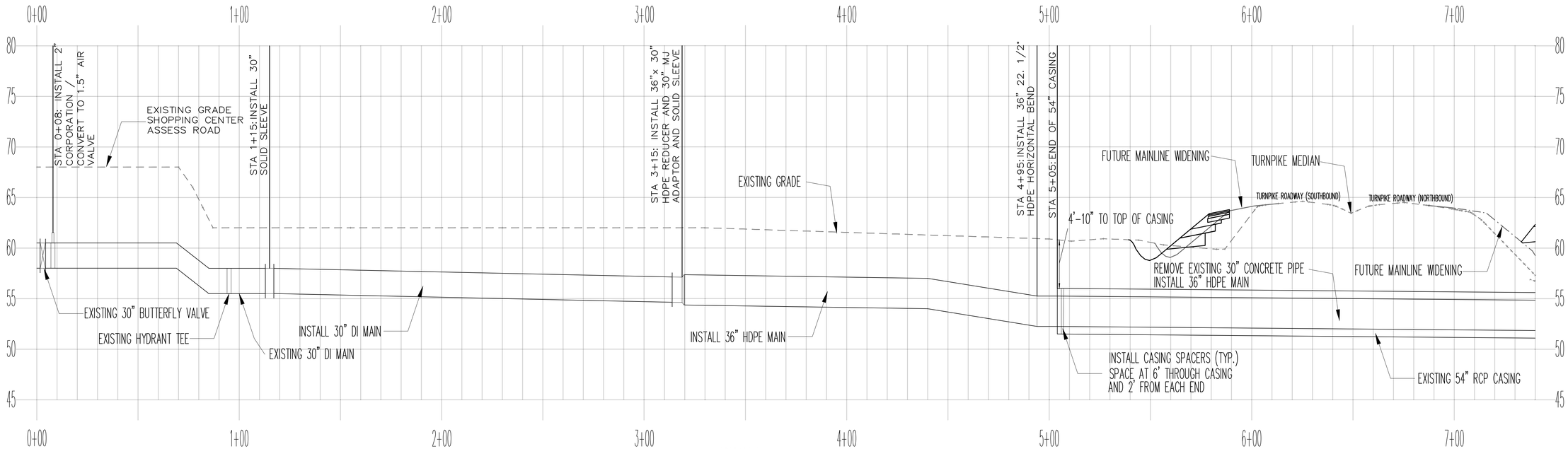


PROFILE
VERTICAL: 1"=5'
HORIZONTAL: 1"=25"

PROJECT:
437698

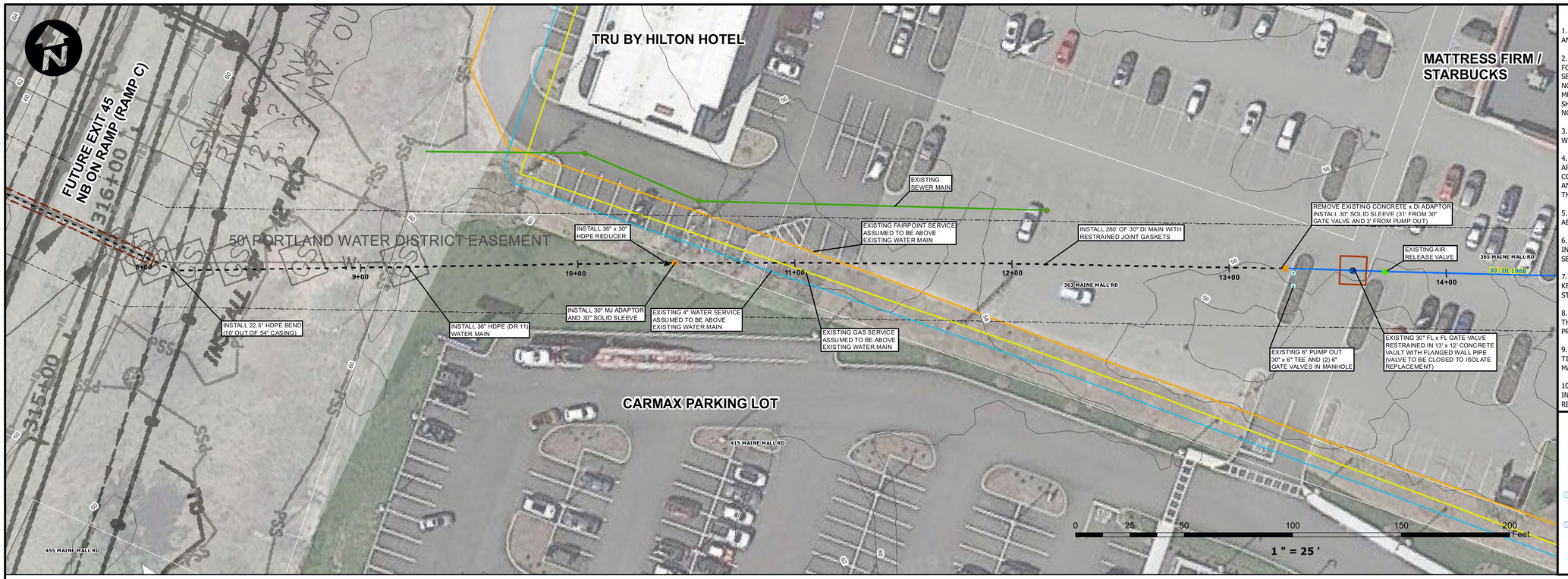
MTA CROSSING - MAINE MALL ROAD SOUTH PORTLAND, MAINE WATER MAIN REPLACEMENT

STATE OF MAINE — TIMOTHY J. MCMULLIN — 9780 — REGISTERED PROFESSIONAL ENGINEER

DRAWN BY: BSJ
DESIGN BY: TM
DATE: 08/08/2019

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104
(207) 774-5961 • WWW.PWD.ORG

SHEET:
4 OF 8



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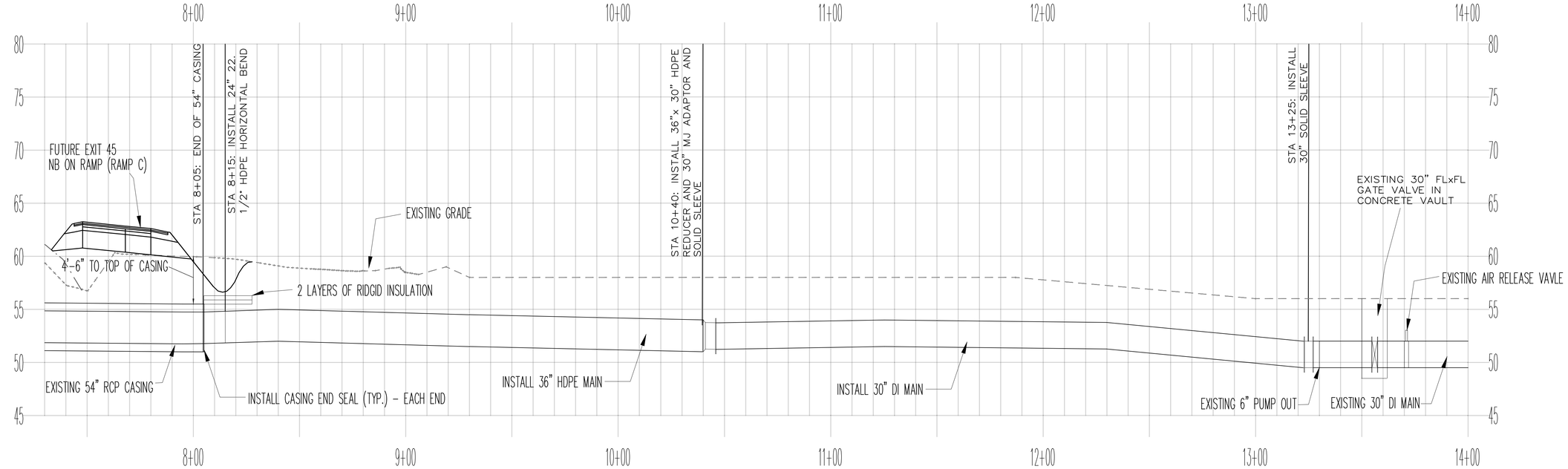

PROFILE
VERTICAL: 1"=5'
HORIZONTAL: 1"=25"

PROJECT:
437698

MTA CROSSING - MAINE MALL ROAD SOUTH PORTLAND, MAINE WATER MAIN REPLACEMENT

STATE OF MAINE TIMOTHY J. MCMULLIN 13180 REGISTERED PROFESSIONAL ENGINEER

DRAWN BY: BSJ
DESIGN BY: TM
DATE: 08/08/2019

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104
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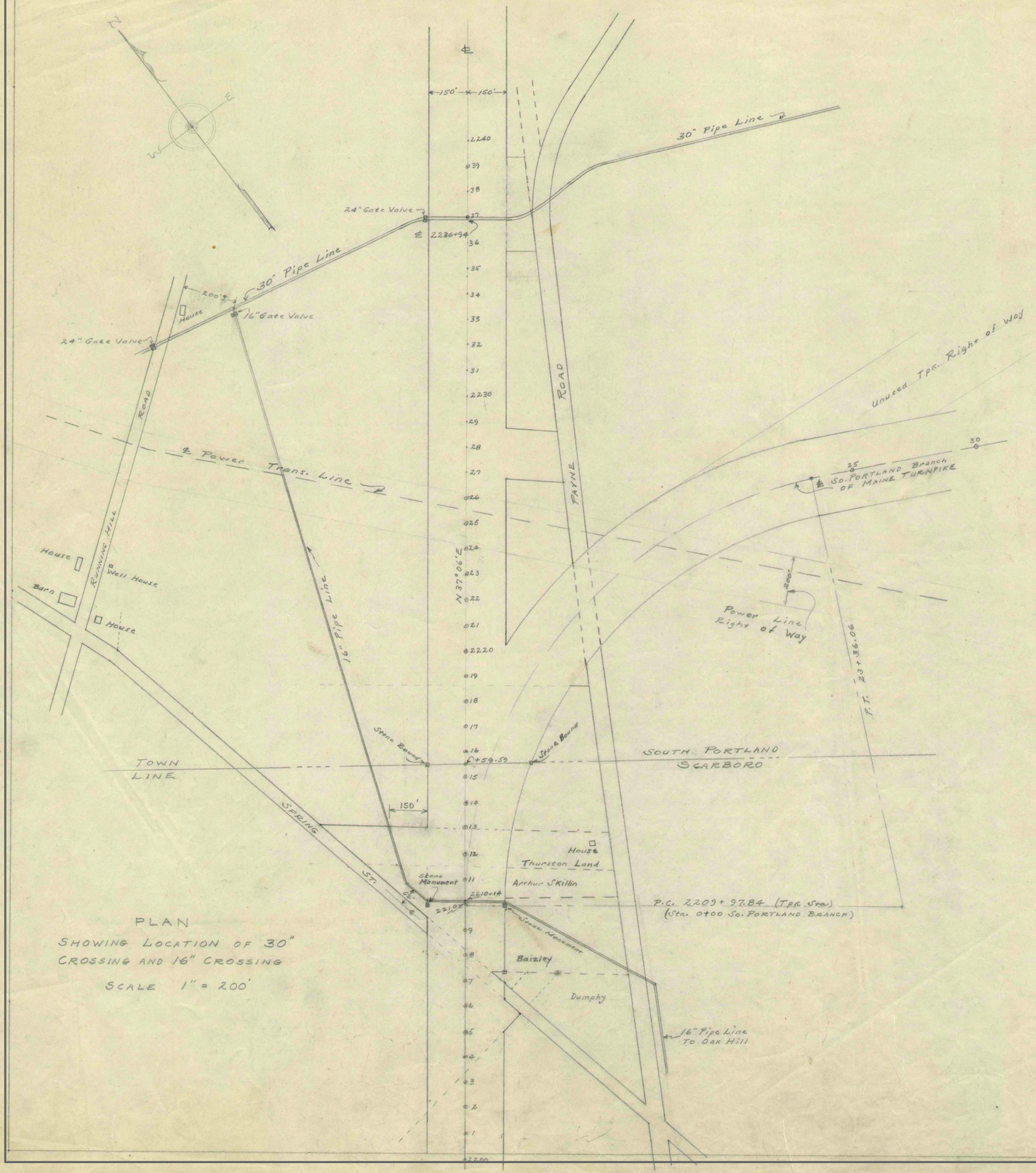
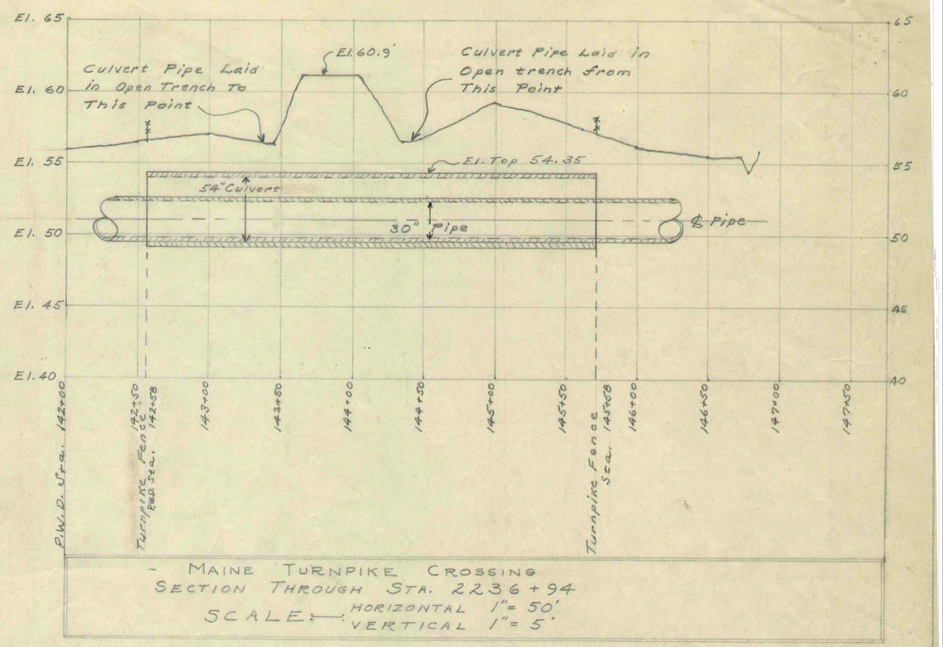
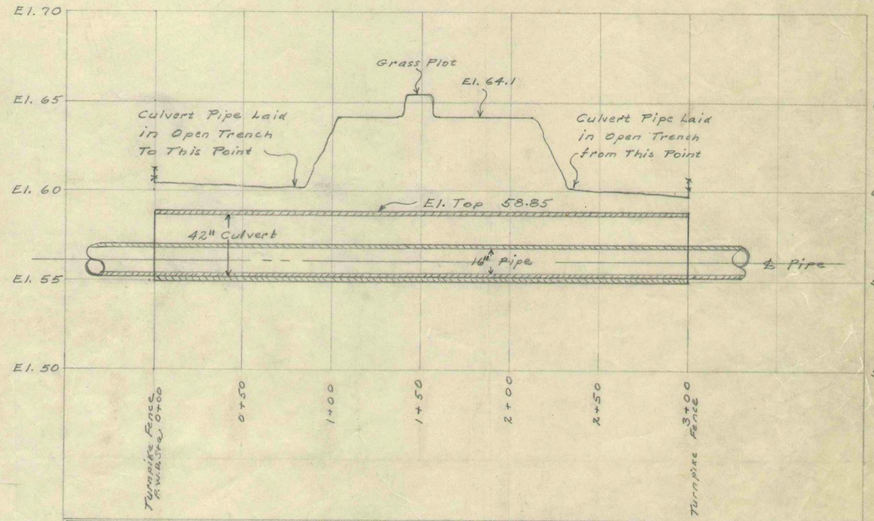
SHEET:
5 OF 8



PLAN
SHOWING LOCATION OF 30" CROSSING AND 16" CROSSING
SCALE 1" = 200'



MAINE TURNPIKE CROSSING
SECTION THROUGH STA. 2236+94
SCALE:— HORIZONTAL 1" = 50'
VERTICAL 1" = 5'



MAINE TURNPIKE CROSSING
SECTION THROUGH STA. 2210+10
SCALE:— HORIZONTAL 1" = 40'
VERTICAL 1" = 4'

DETAILS OF MAINE TURNPIKE CROSSINGS AT STA. 2236+94 AND STA. 2210+10 FOR 30" AND 16" PIPE LINES.

PORTLAND WATER DISTRICT
PORTLAND, MAINE
SCALE:- As Indicated
Date:- May 12, 1949
(Elevations on Warren Base)
Approved
Herman Bray

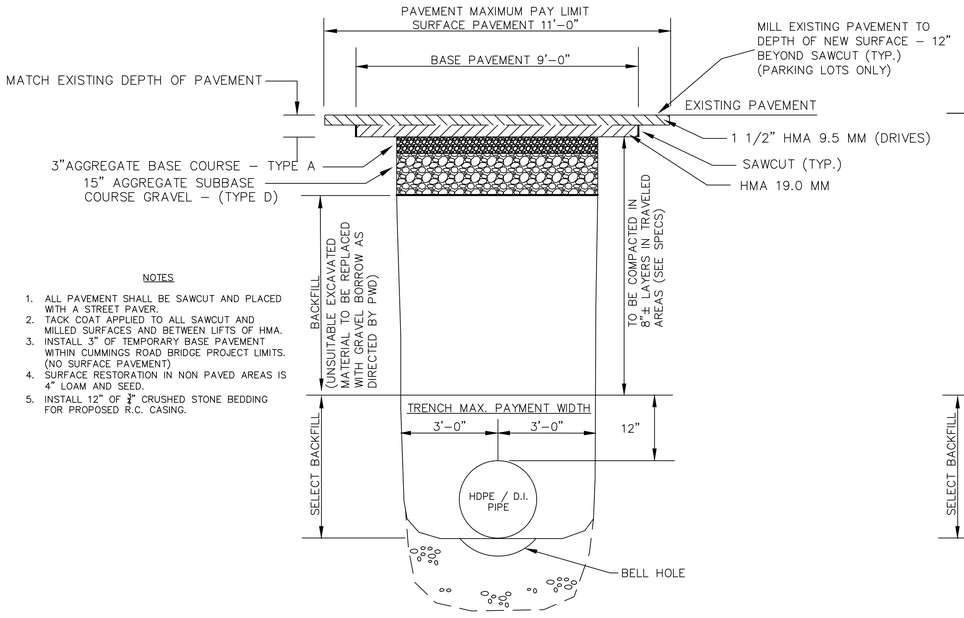
Correction - 16" Crossing Aug. 3, 1949

PROJECT:
437698

RECORD DRAWING - (DATE: 5-12-1949)
DETAILS OF MTA WATER MAIN CROSSINGS
(16")CUMMINGS ROAD AND (30") MAINE MALL ROAD

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104

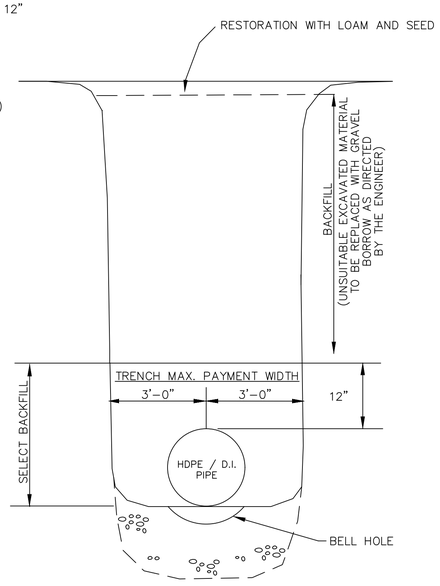
SHEET:
6 OF 8



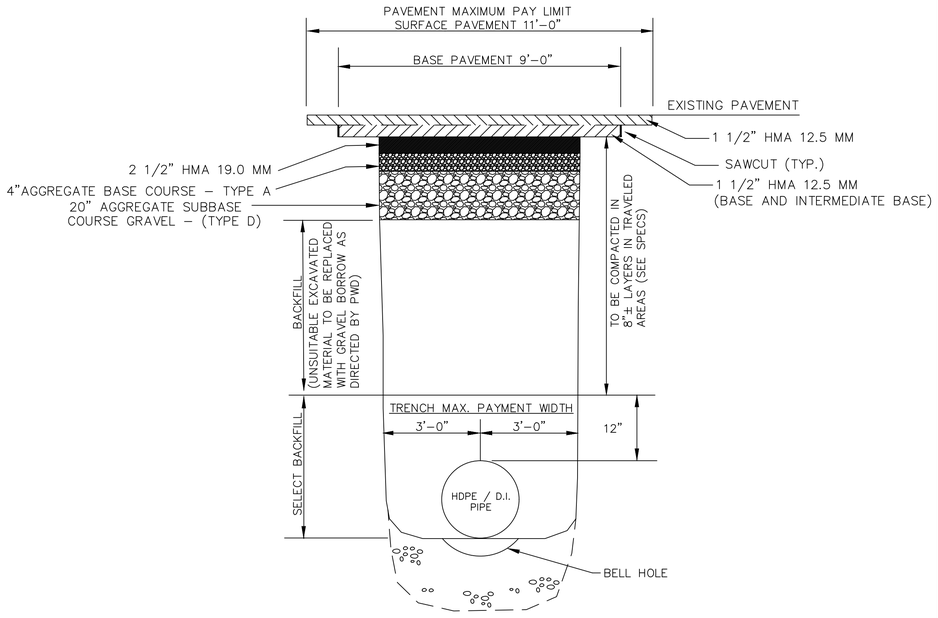
NOTES

1. ALL PAVEMENT SHALL BE SAWCUT AND PLACED WITH A STREET PAVER.
2. TACK COAT APPLIED TO ALL SAWCUT AND MILLED SURFACES AND BETWEEN LIFTS OF HMA.
3. INSTALL 3" OF TEMPORARY BASE PAVEMENT WITHIN CUMMINGS ROAD BRIDGE PROJECT LIMITS. (NO SURFACE PAVEMENT)
4. SURFACE RESTORATION IN NON PAVED AREAS IS 4" LOAM AND SEED.
5. INSTALL 12" OF ¾" CRUSHED STONE BEDDING FOR PROPOSED R.C. CASING.

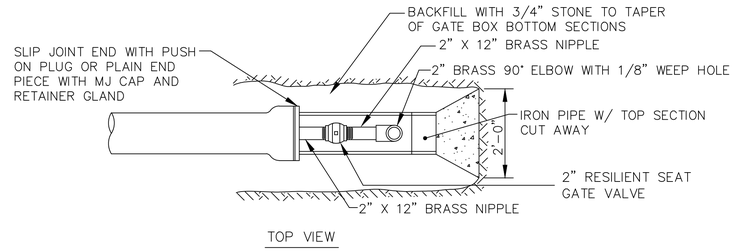
SECTION THRU PARKING LOT

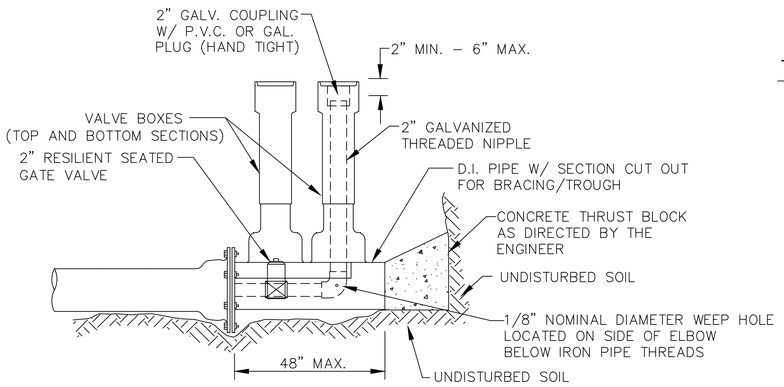


SECTION THRU EARTH TRENCH

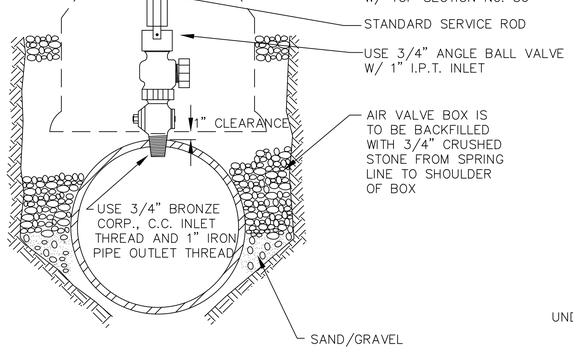


SECTION THRU CUMMINGS ROAD
(OUTSIDE CUMMINGS ROAD BRIDGE PROJECT LIMITS)

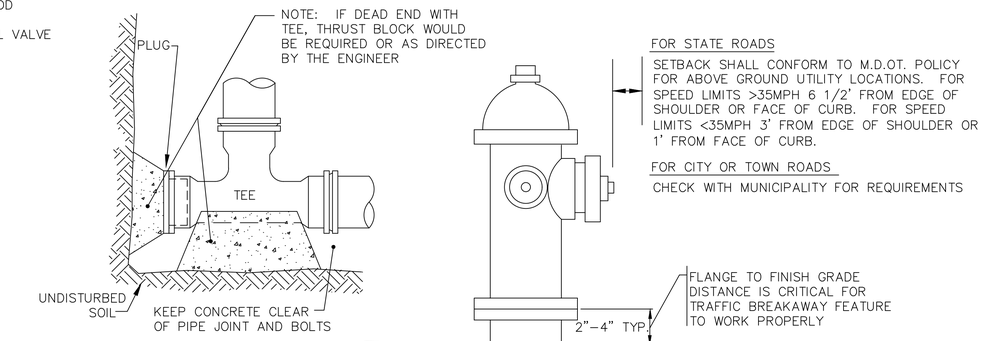




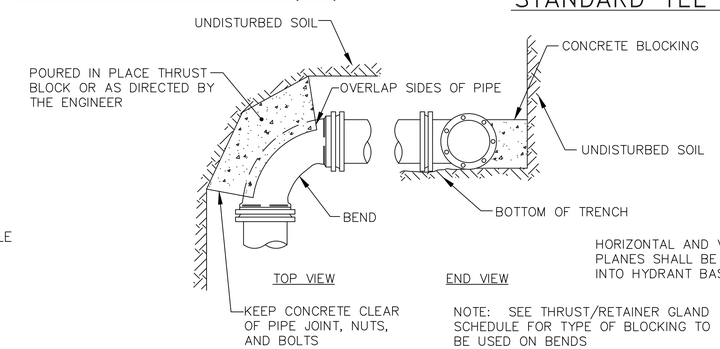
STANDARD 2" BLOW OFF



TYPICAL AIR VALVE (1")



STANDARD TEE BLOCKING



NOTE: SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

STANDARD BEND BLOCKING

TYPICAL HYDRANT INSTALLATION DETAIL

PROJECT: 437698

MTA CROSSINGS - CUMMINGS ROAD AND MAINE MALL ROAD WATER MAIN REPLACEMENT STANDARD DETAILS

STATE OF MAINE * TIMOTHY J. MCMULLIN 9735 REGISTERED PROFESSIONAL ENGINEER

DRAWN BY: BSJ
CHECKED BY: TM
DATE: 08/08/2019

Portland Water District
ASSET MANAGEMENT AND PLANNING DEPARTMENT
225 DOUGLASS STREET, PORTLAND ME 04104
(207) 774-5961 EXT. 3041 • MEANS@PWD.ORG

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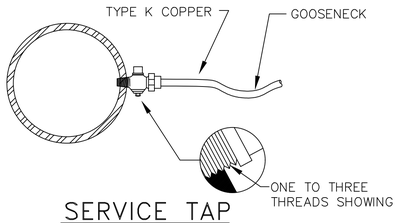
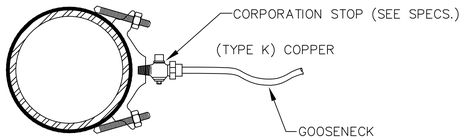
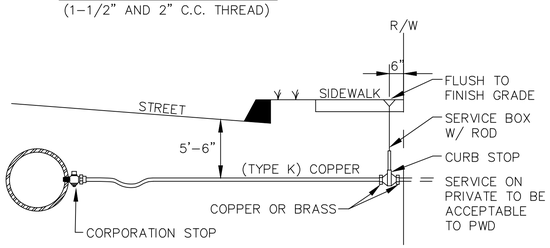


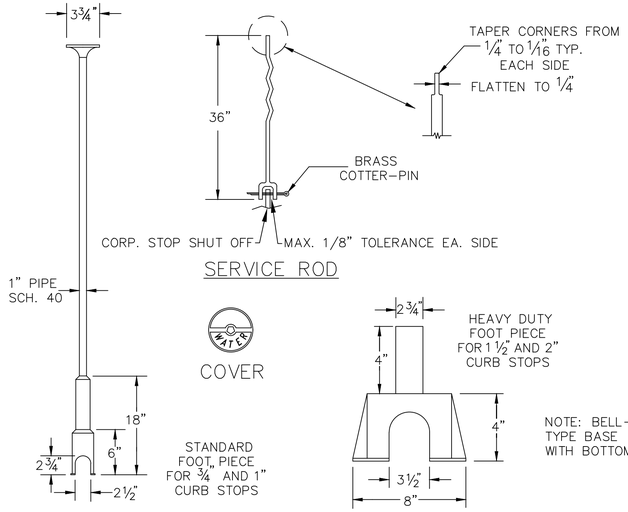
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



TYPICAL SERVICE CONNECTION

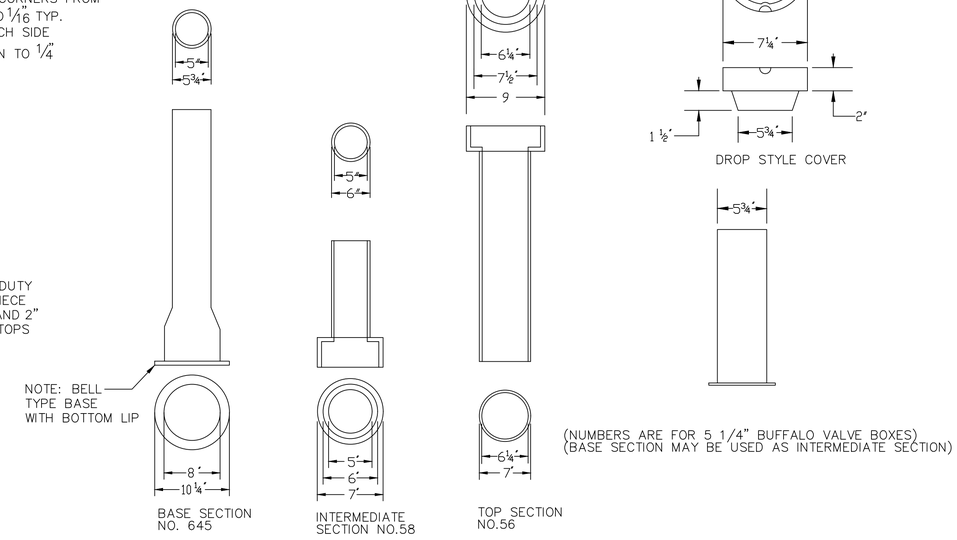


SERVICE ROD

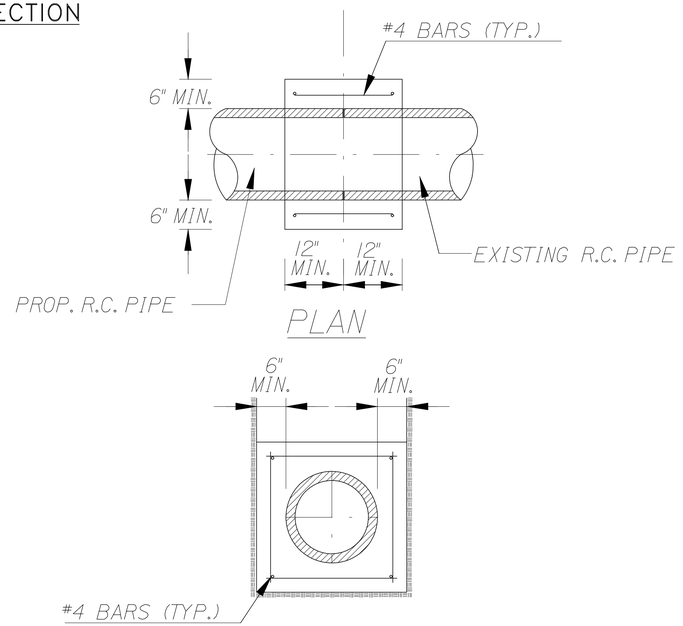
SERVICE BOX

FOOT PIECE

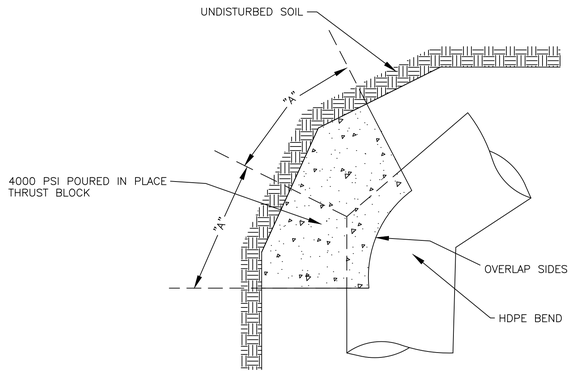
NOTE : ANY EXTENSION OF SERVICE BOX REQUIRES:
1) 1" FEMALE IRON PIPE COUPLING
2) 1" THREADED PIPE
(THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT.
SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



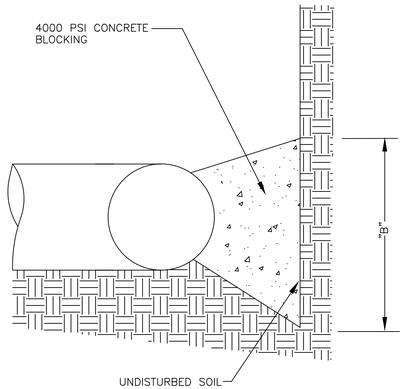
VALVE BOX & COVER



SECTION CONCRETE COLLAR
N.T.S.



TOP VIEW



END VIEW

HORIZONTAL HDPE BENDS		THRUST BLOCK	
SIZE	FITTING	DIM. "A" (MIN.)	DIM."B", FT. (MIN.)
36"	22 1/2° BEND	2'-6"	3
24"	22 1/2° BEND	1'-6"	2'-6"

HDPE BEND BLOCKING
N.T.S.

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