Longmeadow Road Extension

Bid number 28-21

Addendum #2

OCTOBER 25, 2021

Questions/Answers

Q1. Item 206.2 Rock Structure excavation is not included. How will this be paid? Subsidiary to Item No. 203.2?

A1. It is not anticipated that any rock structure excavation will be required as part of this project. However, Item 206.2 has been added to the bid form with a 2 CY quantity in the event that rock structure excavation becomes necessary.

Q2. Item 604.325 Drain manhole 5' diameter. Should this be 604.326? There is a 6' called for on the plans (PDMH2) but not a 5'.

A2. PDMH2 is 6' diameter structure and Item 604.325 has been revised to Item 604.326.

Q3. How do the materials for the rain garden get paid? Fabric, stone materials, organic material and wet seed mix?

A3. Drainage pipe, underdrain, PDMH2, tree clearing & ledge removal (if necessary) for the rain garden have been included within the separate items. Item 670.712 has been added to the bid form and will include the layout, excavation, shaping, outlet control structure (PDI2), fabric, stone materials, organic material, wet seed mix, stabilization, erosion control and any other ancillary portions of the rain garden construction.

Q4. Under landscaping notes, No. 10. Do we need irrigation for the rhododendrons? How will that be accomplished?

A4. Landscaping note 10 has been removed from the plan. <u>There will be no irrigation system</u>.

Q5. Item 604.74 in state spec is "blank". Which structure does this apply to? A ditch line or pavement structure? High capacity It would be 604.73(Type C), 604.75(Type E), or 604.76(Type F) for paved areas?

A5. Item 604.74 has been removed from the bid form. All catch basin and drop inlet grates will be Item 604.72 Type B except for the outlet control structure which is subsidiary to the rain garden item.

Q6. Should PCB 3 & 6 and PDI -1 have Type C 604.73, concrete throat and lid as noted in the detail, or a do you desire a Type E cast iron frame and grate 604.75?

Right now Type 'B' is the only frame and grate being provided for in the bid.

A6. All catch basin and drop inlet grates will be Item 604.72 Type B.

Q7. Is the removal of the existing material piles on site is part of the excavation item?

A7. Removal of the existing material piles and shaping of the berm with them from station 24+00 to 26+50 on adjacent site is covered as part of the

excavation item. However, only existing material piles within the grading easement shown on the plans are to be removed. Moving any other existing piles or portions thereof for any reason will not be paid.

Q8. The plans show the hydrant relocated to the opposite side of the existing Lang Road water main. Is the intent to install a new tapping sleeve and gate valve?

A8 Yes. This item includes excavation and removal of the existing hydrant lateral and hydrant as necessary and then installing either a blind flange, plug or cap on the existing hydrant gate or hydrant lateral stub as directed by Portsmouth Water. Then install a new 10"x6" tapping sleeve on the opposite side of main and provide new tapping valve, hydrant piping all other ancillary tasks to complete the hydrant relocation. The hydrant will be reused or a new one will be provided.

Q9. What size and material is the existing water main in Lang Road?

A9 Existing water main in Lang Road is 10" DI.

Q10 Please clarify the thickness of the concrete in the raised island at Lang Rd, the detail shows 8" thick but the pay item is for 6" thick concrete.

A10 Concrete island should be 8" thick as shown on the detail. The Item number on the bid form has been revised.

Q11 NHDOT Item 609.01 is for vertical granite curb but the plans show sloped curb, please clarify.

A11 Item number has been revised on the bid form to be Item 609.216 Straight Granite Sloped Curb, 6" High.

Q12 What item is the sloped bullnose radius curb paid under?

A12 Sloped bullnose radius curb shall be paid under Item 609.236 Curved Granite Sloped Curb, 6" High, which has been added to the bid form.

Q13 What item is the 8" PVC sleeve for future utility paid under?

A13 The 8" PVC Sleeve shall be paid under Item 603.24108, which has been added to the bid form.

Q14 What item should inlet protection be paid under?

A14 Inlet protection will be subsidiary to the catch basin Item 604.124.

Q15 Please provide an item for joint adhesive, if required.

A15 Item 403.16 Pavement Joint Adhesive has been added to the bid form.

Q16 Sheet C-100 – General Notes 3 & 9 indicate lines and grades to be determined by LLS and as-builts to be certified by LLS. Is a PE acceptable for these requirements?

A16 Sheet C-100 – General Note 3 has been revised to allow for the use of a NH PE. As-builts should be prepared in State Plane coordinates and certified by a NH LLS per General Note 9.

Q17 Sheet C-100 – Landscape Note 10 refers to the installation of an irrigation system. Please confirm this will be part of the landscaping allowance along with Note 16 referencing watering/maintenance.

A17 Landscaping note 10 has been removed from the plan as noted in A4. Note 16 (Note 15 on revised plans) will be the landscaping allowance.

Q18 Requesting the elimination of the 80-Working Days on site. The contract documents allow for the start after 12/31/21 with substantial completion at 7/15/22. This is roughly ~130-working days.

A18 The longer window from start date to substantial completion date is to allow for tree clearing and ledge removal work to be completed during the winter and early spring. 80 Working Days is reasonable for the completion of the project.

Q19 Page 71 – Maintenance of Traffic indicates Portable Message Boards to be readily available within 48-hours. This page then indicates Portable Message Boards are subsidiary. Requesting a pay item for Portable Message Board if they may be required by the engineer/owner.

A19 Portable Message Boards are subsidiary to Maintenance of Traffic. Assume that they will only be required for advanced warning to and during the work in Lang Road to blend the two roads which should be limited to ~2 weeks. As the roadside edges are quite limited on Lang Road, assume the smaller 8' wide boards will be used. If boards are determined to be required for more than two weeks, City owned board(s) will be provided for the extra time.

Additional Revisions:

- Asphalt escalation item 1010.2 has been added to the bid form with a $1,500.00 allowance.

- The plan set has been revised. The revised plan set is dated October 21, 2021. Both the original plan set and the plan set from addendum 1 are to be disregarded.

- The Bid form has been revised. The correct bid form is attached. Please disregard the original bid form and the bid form from addendum 1.

- See additional special provisions attached for the hydrant relocation and Bio-retention pond.

End of Addendum 2.

PROPOSAL FORM

Longmeadow Road Extension Project
Bid #28-21

CITY OF PORTSMOUTH, N.H.

To the City of Portsmouth, New Hampshire, herein called the Owner.

The undersigned, as Bidder, herein referred to as singular and masculine declares as follows:

1. All interested in the Bid as Principals are named herein.

2. This bid is not made jointly, or in conjunction, cooperation or collusion with any other person, firm, corporation, or other legal entity;

3. No officer, agent or employee of the Owner is directly or indirectly interested in this Bid.

4. The bidder has carefully examined the sites of the proposed work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this Bid, and the bidder has carefully read and examined the Drawings, Agreement, Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

5. The bidder understands that the quantities of work calculated in the Bid or indicated on the Drawings or in the Specifications or other Contract Documents are approximate and are subject to increase or decrease or deletion as deemed necessary by the Director of Public Works. Any such changes will not result in or be justification for any penalty or increase in contract prices; and agrees that, if the Bid is accepted the bidder will contract with the Owner, as provided in the Contract Documents, this Bid Form being part of said Contract Documents, and that the bidder will supply or perform all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other activities required by the Contract Documents in the manner and within the time therein set forth, and that the bidder will take in full payment therefore the following item prices, to wit:

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
TR	50	Ton	Trash and junkyard debris removal (F)	$_____	$_____
201.01	0.95	AC	Clearing and Grubbing	$_____	$_____
201.881	650	SY	Invasive Species Control Type 1	$_____	$_____

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
203.1	4,630	CY	Common Excavation	$_____	$_____
			_____		
203.2	1,250	CY	Rock Excavation	$_____	$_____
			_____		
206.2	2	CY	Rock Structure Excavation	$_____	$_____
			_____		
209.1	1,000	CY	Granular Backfill	$_____	$_____
			_____		
214	1	EA	Fine Grading	$_____	$_____
			_____		
304.4	4,065	CY	Crushed Stone (Fine Gradation) (F)	$_____	$_____
			_____		
306.112	1,800	SY	Reclaimed Stabilized Base, Processed in Place, 12” Deep (F)	$_____	$_____
			_____		
306.36	150	Ton	Stone for Reclaimed Stabilized Base	$_____	$_____
			_____		
403.11	2,400	Ton	Hot Bituminous Pavement, Machine Method	$_____	$_____
			_____		
403.12	15	Ton	Hot Bituminous Pavement, Hand Method	$_____	$_____
			_____		

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
403.16	500	LF	Pavement Joint Adhesive _____	$_____	$_____
417	1,788	SY	Cold Planing Bituminous Surfaces _____	$_____	$_____
603.24108	110	LF	8” PVC Pipe Sleeve _____	$_____	$_____
603.33212	1	EA	12” HDPE Flared End Section _____	$_____	$_____
603.82212	238	LF	12” HDPE _____	$_____	$_____
604.0007	4	EA	Polyethylene Liner _____	$_____	$_____
604.124	6	EA	Catch Basin (4’ Dia.) _____	$_____	$_____
604.242	1	EA	Drop Inlets Type D-B _____	$_____	$_____
604.326	1	EA	Drainage Manhole (6’ Dia.) _____	$_____	$_____
604.62	3	EA	Drainage Manhole Cover & Frame _____	$_____	$_____

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
604.72	7	EA	Grate & Frame Type B	$_____	$_____
605.506	1,300	LF	6” Perforated Corrugated Polyethylene Pipe Underdrain	$_____	$_____
607.38	470	LF	Chain link Fence with Vinyl Coated Steel Fabric, 8’ High	$_____	$_____
607.7382	1	U	Double Gate Chainlink Fence with Vinyl Coated Steel Fabric, 8’ High, 20’ Wide	$_____	$_____
608.28	10	SY	8” Concrete Sidewalk (F)	$_____	$_____
609.216	1,240	LF	Straight Granite Sloped Curb, 6” High	$_____	$_____
609.236	16	LF	Curved Granite Sloped Curb, 6” High	$_____	$_____
611.811	1	EA	Adjust/Relocate Hydrant	$_____	$_____
614.523	1	EA	Molded Pull Box for Lighting, 17 by 30”	$_____	$_____
614.73114	800	LF	3” PVC Conduit, Schedule 40	$_____	$_____

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
614.73118	120	LF	3" PVC Conduit, Schedule 80	$_____	$_____
615.01201	32	SF	Traffic Signs, Type A	$_____	$_____
615.0301	197	SF	Traffic Signs, Type C	$_____	$_____
615.0601	36	SF	Traffic Signs, Type CC	$_____	$_____
616.606	1	EA	Traffic Signal Detector Loop 6ft x 6ft	$_____	$_____
618.61	1	Allow	Uniformed Officers with Vehicle	$16,000.00	$16,000.00
618.7	1	HR	Flaggers	$36,000.00	$36,000.00
619.1	1	U	Maintenance of Traffic	$_____	$_____
625.2	2	EA	Concrete Light Pole Bases, Type B	$_____	$_____
625.52	2	U	Light Pole	$_____	$_____

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
628.2	140	LF	Sawed Bituminous Pavement	$_____	$_____
632.0104	4,100	LF	Retroreflective Paint Pavement Marking, 4" Line (Double Yellow)	$_____	$_____
632.0104	8,700	LF	Retroreflective Paint Pavement Marking, 4" Line (Single White)	$_____	$_____
632.3118	100	LF	Retroreflective Thermoplastic Pavement Marking, 18" Line	$_____	$_____
632.32	120	SF	Retroreflective Thermoplastic Pavement Marking, Symbol or Word	$_____	$_____
641	1,450	CY	Loam	$_____	$_____
643.21	1,380	LB	Fertilizer for Re-fertilization	$_____	$_____
644.82	80	LB	Salt Tolerant Grass Seed, Type 82	$_____	$_____
645.512	2,250	LF	Compost Sock for Perimeter Berm	$_____	$_____
650.2	1	Allow	Landscaping	$2,000.00_____	$2,000.00_____

ITEM #	EST. QTY	UNITS	ITEM DESCRIPTION AND UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
670.712	1	U	Bio-Retention Pond	$_____	$_____
			_____		
692	1	EA	Mobilization	$_____	$_____
			_____		
1010.2	1	U	Asphalt Cement Adjustment	$1,500.00_____	$1,500.00_____
			_____		

TOTAL FOR PROJECT AND **BASIS OF AWARD**

In Figures $_____

In Words $_____

To Bidder:

The City reserves the right, after bid opening and prior to award of the contract, to modify the amount of the work in the event that bids exceed budgeted amounts and/or easements and agreements from one or more impacted property owners are not received.

It is the intention of this contract that the items listed above describe completely and thoroughly the entirety of the work as shown on the plans and as described in the specifications. All other items required to accomplish the above items are considered to be subsidiary work, unless shown as a pay item.

The undersigned agrees that for extra work, if any, performed in accordance with the terms and provisions of the Contract Documents, the bidder will accept compensation as stipulated therein.

Date:

_____ By:_____
Company Signature

_____ Title:_____
Business Address

_____
City, State, Zip Code Telephone:_____

All Bids are to be submitted on this form and in a sealed envelope, plainly marked on the outside with the Bidder's name and address and the Project name as it appears at the top of the Proposal Form.

We certify that the Company is currently pre-qualified with the State of New Hampshire for Road Construction.

By: _____ _____
Signature & Title Date

PORTSMOUTH
42350

October 2021

S P E C I A L P R O V I S I O N

SECTION 611 -- WATER INSTALLATION

Description

1.1 **General Description of Work**. The purpose of this work is to relocate an existing hydrant to the opposite side of the road. This item includes excavation and removal of the existing hydrant lateral and hydrant as necessary and then installing either a blind flange, plug or cap on the existing hydrant gate or hydrant lateral stub as directed by Portsmouth Water. Then install a new 10"x6" tapping sleeve on the opposite side of main and provide new tapping valve, hydrant piping all other ancillary tasks to complete the hydrant relocation. The hydrant will be reused or a new one will be provided.

1.1.1 The City of Portsmouth Water Dept. or its Designated Agent, hereinafter called OWNER, together with the ENGINEER, will inspect, accept and/or reject work related to the water facilities herein specified.

1.1.2 The CONTRACTOR shall furnish all materials, labor, tools and equipment, and perform all operations, testing, and incidentals necessary for a complete operating water facilities installation, as outlined herein and on the plans.

1.2 Sequence/Maintenance of Service. The CONTRACTOR is responsible for maintaining continuous water service to all affected customers, except when construction requires an interruption of water service. A service interruption may last no longer than six hours. The CONTRACTOR must obtain written approval from the OWNER prior to interruption of water service to affected water users. The OWNER requires that a written notice be sent to all water customers 72 hours in advance of the scheduled shutdown. The OWNER will provide written notification, but it is the CONTRACTOR's responsibility to establish and address needs, and shall coordinate with the ENGINEER and the OWNER.

1.3 Reference Drawings and Information. The OWNER guarantees the accuracy or completeness of existing conditions shown on the project construction plans for this water facilities work. Sufficient investigations shall be made by the CONTRACTOR so that the CONTRACTOR is knowledgeable of existing conditions prior to tendering a bid.

1.4 Submittals

1.4.1 Shop Drawings are required for each and every element of the water facilities installation work. Shop drawings for water facilities shall be submitted to the Portsmouth Water Division or its Designated Representative, together with the ENGINEER for approval in accordance with 105.02. Each shop drawing shall be assigned a sequential number for purposes of easy identification, and shall retain its assigned number, with appropriate subscript, on required resubmissions.

1.4.2 Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the CONTRACTOR, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.

1.4.3 Shop Drawings shall be submitted as a complete package by Special Provision section, unless otherwise reviewed and approved by the ENGINEER. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the ENGINEER's review. Any deviation from this

requirement, such as submitting miscellaneous metals grouped by structure, shall be requested in writing prior to any associated submittal.

1.4.4 The CONTRACTOR shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

1.4.5 No material or equipment shall be purchased or fabricated specifically for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.

Materials

2.1 Earthwork Materials

2.1.1 Common Backfill. Common backfill shall be granular material, consisting of hard sand and gravel so graded that, of the material passing the No. 4 sieve, not more than 35 percent shall pass the No. 200 sieve. Common backfill shall be free of organic matter, trash, roots or other deleterious material and shall contain no stone measuring greater in any dimension than two-thirds of the loose lift thickness or 8 inches, whichever is smaller. Common backfill shall be capable of forming a firm, stable base when spread and compacted in accordance with this specification. In addition, common backfill shall be non-plastic (plasticity index zero, defined as liquid limit minus plastic limit). Common backfill may be obtained from either on-site excavations or off-site sources. Any materials excavated from the trench not conforming to this specification shall be properly disposed of as specified and replaced with approved material, as required, at no additional cost to the OWNER or NHDOT.

2.1.2 Sand Bedding and Blanket. Sand bedding and blanket material required for installation of the water mains, services, and appurtenances shall meet the following gradation requirements: 100% passing the ½ inch sieve and, of the material passing the #4 sieve, no more than 12% shall pass the #200 sieve.

2.1.3 Gravel Fill. Gravel fill shall consist of hard, durable gravel free from trash, organic matter, clay, surface coatings, and other deleterious materials. Gravel fill shall have a maximum stone size of two-thirds of the loose lift thickness, or 6 inches, whichever is smaller. That portion passing the 4 inch (100 mm) sieve shall meet the following gradation requirements, as determined by ASTM C 136 and ASTM C 117:

Sieve Size	Percent Passing
6 inch	100
No. 4	25-70
No. 200 *	0-12

* Based on fraction passing the No. 4 sieve.

2.1.3.1 Gravel fill will not be used for pipe bedding.

2.1.4 Crushed Gravel. Crushed gravel shall consist of hard durable sand and gravel, free from trash, organic matter, clay, surface coatings, and other deleterious materials. Crushed gravel material shall meet the following gradation requirements, as determined by ASTM C 136 and ASTM C 117:

Sieve Size	Percent Passing
3 inch	100
2 inch	95-100
1 inch	55-85
No. 4	27-52
No. 200 *	0-12

* Based on fraction passing the No. 4 (4.75 mm) sieve.

2.2 Water Mains and Appurtenances. All products and materials shall conform to the latest appropriate section of American Water Work Association (AWWA) and American National Standards Institute (ANSI) Standards and as otherwise specified hereinafter.

2.2.1 Ductile Iron Water Main Pipe

2.2.1.1 Push-On Type Ductile Iron Water Pipe for temporary and permanent systems shall be ductile iron complying with ANSI A21.51 and AWWA C151, Class 52. Pipe shall be double cement-lined $^{1}/_{8}$ inch thick and seal coated inside and out in accordance with ANSI A21.4 and AWWA C104. Joints shall be rubber gasket, push-on type in accordance with ANSI A21.11 and AWWA C111. Use only lubricant that is specified by the pipe manufacturer. **All ductile iron shall be protected by polyethylene bag encasement.**

2.2.3 Brass Wedges. Two brass wedges shall be installed in all push-on type joints to provide electrical conductivity between pipe lengths.

2.2.4 Ductile Iron Fittings shall be mechanical joint type with a 350 psi pressure rating in accordance with ANSI A21.10 and AWWA C110. Fittings shall be double cement-lining $^{1}/_{8}$ inch thick and seal coated inside and out in accordance with ANSI A21.4 and AWWA C104. Fitting shall be Tyler or approved equal. See section 2.3 for thrust restraint.

2.2.5 Mechanical Joint Restraining Devices shall be used with all mechanical joints. Glands shall be manufactured of ductile iron conforming to ASTM A 536. The ring shall be grade 65-45-12 ductile iron in accordance with ASTM A 536. Mechanical joint restraining devices shall be “Grip-Ring” as manufactured by Romec, “Field Lok” gasket system manufactured by Tyler Union or approved equal.

2.2.6 Couplings shall be mechanical joint ductile iron solid sleeve type meeting the requirements stated above for ductile iron fittings.

2.2.7 Valves

2.2.7.1 Gate Valves shall be in accordance with AWWA C509. Gate valves shall be resilient-wedge type with a non-rising bronze stem, 2 inch AWWA operating nut and fusion bonded epoxy coated both inside and out. Gate valves shall have mechanical joints as specified above. The valves shall be American Flow Control - 2500, Mueller 2360, or approved equal. Valves shall open right.

2.2.7.4 Valve Boxes shall be heavy pattern cast iron, two piece, slip type, 5 inch shaft, with extension pieces sufficient to allow proper cover. Valve boxes shall weigh at least 100 pounds with cover. The upper section of the box shall be top-flange type to prevent settlement. The lower section shall be belled type to enclose the operating nut of the valve. The cover shall be cast iron with the word "WATER" plainly cast thereon. Valve boxes shall be Tyler, Mueller, Quality Water Products, or approved equal.

2.2.7.5. Tapping Sleeves shall be mechanical joint, split sleeve with outlet flange conforming to AWWA C-110 section 10-14 with drilling recessed for tapping valve. The sleeve shall be ductile iron construction and include a ¾ inch FIP threaded test plug in the body of the sleeve. Side rubber gaskets shall be rectangular in cross section and fit into grooved channels in the casting. These gaskets shall not require cutting or trimming to match the mechanical joint end gaskets. Tapping sleeves shall be furnished with standard accessories including, but not limited to: glands, gaskets, and Cor-Ten bolts and nuts or equivalent. All flange bolts shall be 316 stainless steel. Interior and exterior of sleeve shall be bituminous coated with a minimum of 4 mils dry thickness. Tapping sleeves shall be capable of accepting a full sized tapping cutter.

2.2.7.6 Tapping Gate Valves shall be resilient wedge style open right valves meeting the same specifications as gate valves under section 2.2.7.1 of these specifications except that one end of the valve shall be equipped with a flange conforming to AWWA C-110 section 10-14 for attachment to the tapping sleeve.

2.2.8 Hydrants and Appurtenances

2.2.8.1 Hydrant will be provided or reused as determined by the City.

2.2.8.2 Hydrants shall open right.

2.2.8.3 For purposes of standardization, hydrants shall be Kennedy K-81A, or approved equal. Hydrants shall have been manufactured no earlier than one year prior to installation. Hydrants shall be thoroughly cleaned and given two shop coats of paint in accordance with AWWA Specification C502 before shipment. Paint color shall be the standard hydrant color of the Portsmouth Water Dept.

2.2.8.4 If the paint coating on any hydrant is damaged during shipping or installation, the CONTRACTOR shall touch-up paint the hydrants in accordance with AWWA Specification C502.

2.3 Concrete for thrust restraint shall be Class B in accordance with Section 520.

2.4 Insulation

2.4.1 Board Insulation shall be rigid extruded polystyrene 8 feet long, 2 feet wide, and 2 inches thick having an R value of 10 and conforming to ASTM C 578, Type VII, and shall be STYROFOAM HI-60 as manufactured by Dow Corning Chemical Co. or approved equal.

Construction Requirements

3.1 General. The CONTRACTOR shall furnish all water main pipe, fittings, services and related material and appurtenances, labor, tools and equipment, granular material, and concrete; and perform all operations and incidentals necessary for complete excavation, installation, backfill, and testing as outlined herein and on the plans; and maintain service at all times.

3.1.1 The CONTRACTOR shall be responsible for the layout of the work. The water mains, service connections and appurtenances shall be built at the locations indicated on the Plans to facilitate reconstructing other facilities within this area of the project.

3.1.4 Consequential damages resulting from the CONTRACTOR not locating the facilities as shown on the Plans are the responsibility of the CONTRACTOR.

3.1.5 The CONTRACTOR, at the completion of each part of the work, shall furnish the as-built locations of the water main and appurtenances referenced to NHDOT'S Construction Base Line and Benchmarks. The as-built locations shall be to an accuracy of plus or minus 0.10 feet in plan and elevation.

3.1.6 Any deviations from the locations shown on the Plans require the OWNER's and the ENGINEER's approval. Any discrepancies with locations shown on the plans shall be brought to the ENGINEER’s attention and subsequently resolved between the OWNER, the ENGINEER and the CONTRACTOR.

3.3 Trench Excavation

3.3.1 General. Excavation, dewatering, sheeting, and bracing shall be carried out in such a manner as to eliminate any possibility of undermining or disturbing the foundations of any existing structure, utilities or any work previously completed under this contract.

3.3.2 On paved surfaces that will not be resurfaced under this contract, the CONTRACTOR shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are so shaped to allow cutting or damage of such surfaces during excavation or other phases of the work.

3.3.3 All lawns, paved surfaces, roadways, and structures which have been damaged or disturbed by the CONTRACTOR's operations outside of the project work areas shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of operations or as specified on the plans.

3.3.4 The CONTRACTOR shall provide trench shoring and dewatering, if necessary, to provide a stable and dry trench at all times. The pipe trench must be dewatered to 1 foot 6 inches below the invert of the new water pipe. Trench width shall be 2 feet plus the diameter of the pipe. Cover on pipe shall be a minimum of 5 feet 6 inches. Trench depth shall extend to 6 inches below the invert of the pipe.

3.3.5 As the excavation approaches pipes, conduits, or other underground structures, digging by conventional trenching machine methods shall be discontinued. Only manual methods of excavating shall be employed around buried utilities.

3.3.6 Prior to doing any work outside the right-of-way line on private property for connection of water services, the CONTRACTOR shall advise the property owner of the work and/or disturbance of the person's property that shall be performed, and the restoration thereof.

3.3.7 The CONTRACTOR shall maintain utilities, utility services and sewer pipe encountered in the excavation, and repair or replace them to their owner's satisfaction and be responsible for consequential damages thereof.

3.3.8 The CONTRACTOR shall not be compensated for any additional work required in working in close proximity to a utility line, sewer or underground structure in the trench line above or below the water pipe, except for common structure excavation (if required).

3.3.9 Excavations shall be kept dry until the pipes and appurtenances to be built therein have been completed to such extent that they shall not be damaged.

3.3.9.1 Provide, operate and maintain any dewatering system required to lower and control groundwater levels and groundwater hydrostatic pressure during the construction of the Work as required by this Section and the Contract Documents. The CONTRACTOR shall assume full responsibility and expense for the adequacy of the dewatering system with no additional time for performance.

3.3.9.2 The dewatering system shall be capable of developing an excavated subgrade relieved of any hydrostatic pressure that could cause a decrease in the stability of the excavated subgrade and which shall provide the necessary groundwater control for the proper performance required for completion of the Work.

3.3.9.3 Properly dispose of subsurface water collected in a manner that conforms to all applicable local and state ordinances, statutes and laws. Obtain all permits required for operation of the dewatering system.

3.3.9.4 Maintain continual and complete effectiveness of the dewatering system operation to provide a firm, stable, excavated subgrade at all times as required for proper performance of the Work.

3.3.9.5 Provide dewatering necessary to maintain the groundwater table 18 inches (450 mm) below the base of the proposed structure and/or pipe at all times.

3.3.9.6 **Erosion Control.** Provide adequate protection from erosion from any of the dewatering operations utilized during the course of the construction. Any damage, disruption or interference to newly constructed work or existing properties, buildings, structures, utilities and/or other work resulting directly or indirectly from dewatering operations conducted under this Contract shall be remedied by the CONTRACTOR, at no cost to the OWNER or DEPARTMENT.

3.3.10 **Over-Excavation.** If, in the opinion of the ENGINEER together with the OWNER, the material at or below the depth of the trench is unsuitable for foundation, it shall be removed to such depths as directed by the OWNER and ENGINEER and shall be replaced with compacted Granular Backfill (Sand), conforming to 209.2.1.1, and placed as provided in 209.3.

3.3.11 If the bottom of the excavation is deeper than the depth shown on the plans, by error of the CONTRACTOR, the condition shall be corrected by refilling to the proper grade with compacted Granular Backfill (Sand), conforming to 209.2.1.1. All costs shall be borne by the CONTRACTOR.

3.3.12 Rock and Boulder Excavation shall be in accordance with Section 206.

3.3.13 Excess and Unsuitable Excavation. Excavation not used for backfill and unsuitable excavation shall be removed from the site and properly disposed of by the CONTRACTOR in accordance with local, State or Federal regulations.

3.4 Trench Backfill

3.4.1 General. After the pipe has been placed and has been inspected by the OWNER together with the ENGINEER, backfilling shall be performed without delay.

3.4.2 Bedding shall extend the full width of the trench from 6 inches below the pipe, to the springline (horizontal centerline) of the pipe. Compact the bedding material to 95% Modified Proctor in accordance with ASTM D 157 and ASTM D 2922 prior to the placement of the blanket material.

3.4.3 Blanket Material shall be placed from the springline of the pipe to a minimum of 12 inches above the pipe crown. The trench shall be backfilled by placing and compacting the blanket material in lifts of 6 inches or less to 95% Modified Proctor in accordance with ASTM D 157 and ASTM D 2922. The filling shall be carried up evenly on both sides of the pipe with care taken not to raise or otherwise disturb the pipe. Compact the blanket material with approved hand-operated devices.

3.4.4 Backfill shall be placed from 12 inches above the pipe crown to the underside of the pavement select material profile, or to the underside of loam and grassed areas, with common backfill described herein and as approved by the ENGINEER.

3.4.4.1 Backfill shall be placed and compacted in layers of 6 inches or less. Compact the backfill material to 95% Modified Proctor in accordance with ASTM D 157 and ASTM D 2922. Compaction shall be by hand-operated compactors, or other approved method.

3.4.4.2 Jetting and bucket compaction are not acceptable means of compaction.

3.4.4.3 Trench areas improperly backfilled or having excessive settlement, as determined by the ENGINEER, shall be reopened to the required grade, backfilled using proper techniques, and repaved as necessary. The CONTRACTOR shall receive no additional compensation for repair of trenches constructed under this Contract.

3.4.5 Trench Pavement Patch. All pavement patching of water main-related trenches shall be in accordance with Section 401.3. The water main trench pavement edges shall be saw-cut prior to permanent patching.

3.5 Pipe Installation

3.5.1 General.

3.5.1.1 Pipe and fittings shall be handled with care to ensure that the pipe and fittings are in sound, undamaged condition. Particular care shall be taken to prevent damage to pipe coating and lining (if any).

3.5.1.2 The CONTRACTOR shall furnish slings, straps and/or other approved devices to support the pipe when it is lifted. Pipe and fittings shall not be dropped from trucks onto the ground or into the trench. Transporting pipe and fittings from storage areas shall be restricted to operations which shall not cause damage to the pipe or lining (if any).

3.5.1.3 All pipe and fittings shall be examined before laying, and no pipe or fittings shall be installed which are found to be defective. Damaged pipe coatings and/or lining (if any) shall be repaired as approved or directed by the ENGINEER at no additional cost to the OWNER or NHDOT.

3.5.1.4 Any pipe showing a distinct crack with no evidence of incipient fracture beyond the limits of the visible crack, if approved, may have the cracked portion cut off by, and at the expense of, the CONTRACTOR before the pipe is laid so that the pipe used is sound. The cut shall be made in the sound portion of the barrel at least 12 inches from the visible limit of the crack.

3.5.1.5 If any defective pipe is discovered after it has been laid, the CONTRACTOR shall remove the defective pipe and replace it with sound pipe at no additional cost to the OWNER or DEPARTMENT.

3.5.1.6 Pipe and accessories shall be kept in a sound, undamaged condition. They shall, at all times, be handled with care and shall not be dropped, dumped or bumped against any other object. Damaged material shall be replaced at no cost to NHDOT or OWNER, at any time during the construction that the damage is identified or occurs.

3.5.1.7 Pipe shall be stored off the ground.

3.5.2 Buried Pipe Installation. Installation of all buried piping shall be in accordance with AWWA Standard for installation of ductile iron water mains and their appurtenances, AWWA C600.

3.5.2.1 Pipe and fittings shall be thoroughly cleaned before they are placed. All lumps, blisters, and excess coal tar coating shall be removed from the spigot and from the interior of the bell, and these surfaces shall be wire-brushed, wiped clean and dry, and be free from oil and grease before the pipe is laid.

3.5.2.2 The interior of pipe, fittings and valves shall be kept clean and free of foreign material or soils at all times during storage and installation, or the material will be subject to rejection by the OWNER and ENGINEER.

3.5.2.3 All pipes and appurtenances laid in open trench excavation shall be bedded and uniformly supported over their full-length on bedding of the types specified herein and shown on the drawings. All work shall be performed in a dry trench.

3.5.2.4 Pipe and fittings shall be laid accurately to the line and grades. Care shall be taken to provide a firm bearing for the pipe along its entire length. Pipes shall not be laid in water, nor shall water be allowed to flow through them.

3.5.2.5 At all times when pipe laying is not actually in progress, the open ends of pipe in the trench shall be closed by temporary water-tight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

3.5.2.6 Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, the amount of deflection allowed shall not exceed that required for making a satisfactory joint and shall be subject to the approval of the OWNER and ENGINEER.

3.5.2.7 For mechanical joints, the spigot shall be centrally located in the bell, and adequate anchorage shall be provided at abrupt changes in direction and at dead-ends. All surfaces in contact with the rubber gaskets shall be brushed thoroughly with a wire brush immediately prior to assembly. The clean surfaces shall then be brushed with manufacturer's recommended lubricant prior to slipping the gasket over the spigot and into the bell. Lubricant shall also be brushed over the gasket prior to installation for the purpose of removing loose dirt and lubricating the gasket as it is forced into its retaining space. The CONTRACTOR shall use wrenches as recommended by the manufacturer. When tightening bolts, it is essential that the gland be drawn toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket.

3.5.2.8 For push-on joints, all foreign matter in the gasket seat in the socket shall be removed and the gasket wiped clean and flexed before placing in its seat. A thin film of lubricant shall be applied to the inside surface of the gasket. The plain end of the next pipe, after wiping clean, shall be aligned and carefully entered into the socket until it just makes contact with the gasket. Joint assembly shall be completed by forcing the end of the pipe past the gasket until it makes contact with the bottom of the socket. Final joint assembly of pipe 8 inches and smaller shall be accomplished by pushing against the face of bell of the entering pipe with a crow-bar or other tool. For larger pipe, the assembly shall be made with a jack and suitable slings.

3.5.2.9 When pipe is cut in the field, the cut end shall be tapered back approximately $^{1}/_{8}$ inch at an angle of 30 degrees with the centerline of the pipe with a coarse file or grinder to remove any rough edges which might injure the gasket.

3.5.2.10 The CONTRACTOR shall furnish and install all supports necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the drawings or as directed by the OWNER and ENGINEER.

3.5.2.11 Bends, tees, and other fittings in pipe lines buried in the ground shall be backed up with thrust restraint Class B concrete, ½ cubic yard minimum, against undisturbed earth (bearing area as shown on the plans). If the soil does not provide firm support, then bridle rods, clamps, etc. shall be provided to brace the fittings properly. All accessories shall be seal-coated thoroughly and heavily with an approved material per AWWA C104 after assembly and shall be subsidiary to the ductile iron fitting unit price. Thrust blocks are to be poured in place unless otherwise approved by the ENGINEER.

3.5.2.12 Insulation shall be installed as shown on the plans or as directed by the ENGINEER.

3.8 Valve Installation. Valves and boxes shall be set with the stem vertical and box vertically centered over the operating nut. Valves shall be set on a firm foundation and supported by tamping selected excavated material under and at the sides of the valve. The gate box shall be supported during backfilling and maintained in vertical alignment with the top flush with finish grade.

3.9 Hydrants. Hydrants shall be set at the locations shown and bedded on a firm foundation. Each hydrant shall be set in true vertical alignment and properly braced.

3.9.1 Hydrants shall be mechanically restrained by either GripRing or Megalug type joint restraint systems as well as a thrust block.

3.9.2 Height adjustments shall be made to the hydrants so that the bottom flange of the hydrant is 3 inches above finish grade. Height adjustments shall be made with extension as manufactured by the hydrant supplied. All hydrant extension shall be considered subsidiary to the hydrant bid item.

3.9.3 Wherever a hydrant is set in soil that is pervious, a drainage pit 2 feet in diameter and 1 foot deep shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand, under and around the elbow of the hydrant and to a level of 6 inches above the waste opening. Compaction shall be in accordance with 304.3.7.

3.9.5 Hydrants shall be set on a concrete base or another material base approved by the ENGINEER and shall be well braced and anchored by depositing concrete behind the hydrants on undisturbed earth at the end of the trench, or by wedging granite block in place of concrete.

3.9.6 When hydrants are to be removed the existing isolation valve shall be capped or hydrant piping shall be cut and capped a maximum of 12 inches from the water main tee with a $^{1}/_{3}$ Cubic Yard concrete thrust block poured against the cap. Portsmouth Water will decide how to terminate the old connection.

3.9.7 The water main may be shut off for a maximum of 4 hours beginning after 9:00 a.m. for the removal of hydrants or installation of the tap or tee. Coordinate the shut off with the utility.

3.9.8 No hydrant shall be backfilled until directed by the ENGINEER.

3.12 Inspection. Each section of installed water main will be visually inspected by the OWNER and ENGINEER. The pipe shall be true to both line and grade, shall contain no broken pipe, shall show no leaks, and shall contain no debris or other deposits of which shall in any way reduce the full cross-sectional area of the pipe.

3.12.1 Any section of water pipe which does not comply with these inspection criteria, as determined by the OWNER and ENGINEER, shall be promptly corrected, replaced or repaired by the CONTRACTOR at no cost to the OWNER or NHDOT. Such methods as are employed for the correction shall be approved by the OWNER.

3.13 Pressure and Leakage Testing. The CONTRACTOR shall furnish all necessary equipment and labor for, and perform, pressure testing and leakage tests on the water pipe in accordance with AWWA C600 Specifications.

3.13.1 The CONTRACTOR shall make any taps and furnish all necessary caps, plugs, etc., as required in conjunction with testing, and also furnish a test pump, gauges, and any other equipment required in conjunction with carrying out the hydrostatic tests.

3.14 Disinfection. Before being placed in service, all new and temporary water pipelines shall be chlorinated by the CONTRACTOR in accordance with the requirements of AWWA C651. The procedure shall be discussed with the OWNER and ENGINEER prior to proceeding with the work.

3.14.1 The location of the chlorination and sampling points will be determined by the OWNER and ENGINEER in the field. Taps for chlorination and sampling shall be uncovered and backfilled by the CONTRACTOR, as required. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines, and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for a minimum of 24 hours.

3.14.2 Following the chlorination period, all treated water shall be flushed from the lines at their extremities, and replaced with water from the distribution system. Bacteriological sampling and analysis of the replacement water shall then be made after the replacement water has occupied the chlorinated pipeline for a minimum of 16 hours. Bacteriological analysis shall be completed by a state-certified laboratory in full accordance with AWWA C651. The CONTRACTOR shall re-chlorinate at no cost to the OWNER or DEPARTMENT if the test fails to achieve satisfactory results, as approved by the ENGINEER. The line shall not be placed in service until the requirements of the NHDES, Water Supply Engineering Bureau are met.

3.14.3 Special disinfection procedures, such as soaking or swabbing approved by the ENGINEER, shall be used in connections to existing mains and where the method outlined above is not practical.

Method of Measurement

Hydrant including tapping saddle, valve, pipe fittings, extensions and any other incidental work such as eliminating or capping the original hydrant lateral, including excavation and backfill, will be measured by the number of units installed.

Basis of Payment

5.4 The accepted quantity of hydrants relocated will be paid for at the contract unit price for each complete in place.

5.8 Any work not specifically having a pay item and necessary for a complete and operational water system, as herein specified and called for on the plans, shall be considered incidental and subsidiary to the pay item work specified herein. The work considered as subsidiary and not separately paid for shall include but not be limited to the following:

5.8.1 Pipe material handling and storage on site.

5.8.2 Excavation, bedding, blanket and backfill.

5.8.3 Sheeting, shoring, and dewatering of trenches (if applicable).

5.8.4 Concrete thrust blocks, thrust restraining systems.

5.8.6 Restoration of property including loam and seed, utilities, and water lines (if applicable).

5.8.8 Pressure testing, disinfection, flushing.

5.8.10 Plugging abandoned water pipe.

5.8.12 Saw cutting of existing pavement.

5.8.13 Record plans.

PORTSMOUTH

October 2021

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 670 – BIO-RETENTION POND

Item 670.712

Amend Section 670 to include:

Description

1.1: This work will include the layout, excavation, shaping and grading, outlet control structure (PDI2), fabric, stone materials, organic material, wet seed mix, stabilization, erosion control and any other ancillary portions of the rain garden construction.

Materials

2.1 Materials are shown on Sheet C 506 of the Plan set.

Method of Measurement

3.1 Measured by the completed, functional and accepted unit in place.

Basis of Payment

Pay item		Pay unit
670.712	Bio-retention Pond	U