

**Opinion of Probable Construction Costs
Town of Richmond, VT - West Main Street 4" Waterline Replacement Project**

Prepared By: GME		Prepared: 10/13/2020		
DESCRIPTION	UNIT	QTY.	UNIT	TOTAL
			PRICE	AMOUNT
A - WATER MAINS & SERVICES				
A-1 - 4" Dia. PVC C900 Water Line	l.f.	415	\$80.00	\$33,200.00
A-2 - 2" Water Line (Millet St)	l.f.	35	\$85.00	\$2,975.00
A-3 - 3/4" Dia. Copper House Service	l.f.	70	\$85.00	\$5,950.00
B - WATER SYSTEM APPURTENANCES				
B-1 - 3/4" Dia. Curb Stops and Boxes	ea.	7	\$600.00	\$4,200.00
B-2 - 2" Dia. Curb Stop (Millet St)	ea.	1	\$700.00	\$700.00
B-3 3/4" Dia. Corp Stops	ea.	7	\$600.00	\$4,200.00
B-4 - 8" x 2" Wet Tap (Millet St)	ea.	1	\$1,500.00	\$1,500.00
B-5 - Blowoff Hydrant	ea.	1	\$500.00	\$500.00
B-6 - Decomission and Abandon Existing Water System	ea.	1	\$2,500.00	\$2,500.00
C - EARTH WORK				
C-1 - Exploratory Excavation (test pits as necessary)	ea.	2	\$1,500.00	\$3,000.00
D - ROAD, SIDEWALK, DRIVE CONSTRUCTION				
D-1 - Gravel Road / Driveway / Pavement Removal	s.y.	65	\$10.00	\$650.00
D-2 - Gravel Driveway Repair	s.y.	30	\$25.00	\$750.00
D-3 - Bituminious Repair - Street	s.y.	25	\$100.00	\$2,500.00
D-3 - Bituminious Repair - Drive's/Walks	s.y.	20	\$100.00	\$2,000.00
D-4 - Repace concrete steps	l.s.	1	\$1,500.00	\$1,500.00
D-5 - Overland Surface Restoration	s.y.	250	\$21.00	\$5,250.00
E - INCIDENTAL WORK				
E-1 - Rigid Trench Insulation	s.f.	200	\$5.00	\$1,000.00
E-2 - Traffic Control	Hour	40	\$120.00	\$4,800.00
E-4 - Erosion Control	l.s.	1	\$1,000.00	\$1,000.00
F-3 - Mobilization/Demobilization	l.s.	1	\$10,000.00	\$10,000.00
F - PROJECT ADMINISTRATION				
F-1 - Bonds	l.s.	1	\$1,200.00	\$1,200.00
SUBTOTAL				\$89,375.00
CONTINGENCY (15% of Construction)				\$13,406.25
OPINION OF PROBABLE CONSTRUCTION COSTS				\$102,781.25

SECTION 01 403 - TESTS AND RESULTS EXPECTED (WATER)

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required, and perform all tests as specified in these Contract Documents. This includes any required corrective actions as specified herein.
B. Requirements by Contractor
1. For water mains installed under this Contract, the Contractor shall perform a hydrostatic and leakage test on each pipe line. (See this Section.)
Two (2) bacteriological-clearance tests shall also be taken for each pipe run. (See Sections 010651, 02675)

(a) Water to be furnished by Contractor.
(b) Insure that water from disinfection of system and all extraneous matter is totally out of system upon completion of flushing.
(c) Dispose of wastewater by method acceptable to the Engineer.
B. Placing into Operation
1. Slowly open proper valve or valves to completely energize and make system fully operational.
C. Check Valve Position
1. Check all valves in the section of the system just commissioned in the presence of the Engineer to insure that they are in proper operating position.
(a) Shut-off on hydrant branch connections to be open.
(b) All main line valves to be open.
(c) Corporation stops and curb stops to be open.

3.04 ADJUSTING:
A. Observe
1. Observe newly commissioned sections of system for proper operation, and to detect flaws, defects, damages, leaks, or incomplete work.
2. Adjust, repair, correct, or complete as necessary.
(a) Retest, disinfest, and commission again as required.
B. Job Completion
1. At job completion and after all systems are placed into operation the Contractor, together with the Engineer, shall make a final check of the position of every valve or stop installed to insure proper operating position, all as part of the final inspection after all punch list items are completed.

3.06 CERTIFICATION:
A. The Contractor shall certify in writing that all parts of the system have been installed properly and are operating properly.
B. These items are, but shall not be limited to:
1. Pipe, valves, hydrants, services, etc.

SECTION 02611 - PIPE AND PIPE FITTINGS - GENERAL

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required to install lay, join, test, and disinfest all water supply, transmission, distribution, house service and all other pipelines and fittings and appurtenances herein and as shown on the Contract Drawings.

1.02 CONTRACTOR'S RESPONSIBILITIES:
A. General
1. Contractor shall furnish all labor, materials, equipment and incidentals required to install all required for complete satisfactory and operating systems as specified and as shown on the Contract Drawings.
(a) To include any and all appurtenances required for a complete installation not specifically shown on the Contract Drawings or specified herein.

B. Workmanship
1. All work to be accomplished in a neat, workmanlike manner.
C. Alignment and Grade
1. As shown on the Contract Drawings or as directed by the Engineer in field.
D. Assembly of Pipe, Fittings, and Appurtenances
1. In accordance with material manufacturer's recommendations.
2. In accordance with these Specifications.
3. Final installations to be free from any strain.
4. All mechanical joint pipe and fittings shall utilize proper type and size retainer glands, "Mega-Lug" or equal.

E. Water Supply Contamination
1. Make all piping connections using water in a method which will eliminate the possibility of spent or other water being drawn back into the water supply piping.
F. Protection of Open Piping
1. Protect open pipe fittings or appurtenance ends whenever work is suspended during construction to prevent any foreign materials or extraneous water from entering them. Use temporary plugs, burlap or other approved materials as applicable to each situation.
G. Removal, Repair, or Replacement of Defective Work
1. Contractor shall remove, repair, or replace any work not conforming to requirements of the project.

SECTION 02613 - AWWA C900 PVC PIPE AND PIPE FITTINGS (4" - 8")

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required to install all AWWA C900 PVC pipe and fittings as specified herein and as shown on the Contract Drawings.

1.02 QUALITY ASSURANCE:
A. Requirements of Regulatory Agencies
1. Install piping to meet the requirements of State of Vermont, Water Supply Division.
B. Potable Water System Materials
1. Seal of Approval of National Sanitation Foundation testing Laboratory.
C. AWWA C900 PVC Pressure Pipe for Water
1. Pipe must meet all standards of the Current AWWA C-900 Standard.
D. Other Requirements
1. Install pipe and fittings to meet the requirements of the so-called "10 State Standards".
2. Reject materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvents, paint thinner and acid solvents.

1.03 SUBMITTALS:
A. Certificates
1. Submit manufacturer's certificates of conformance with the Current AWWA C-900 and other standards as appropriate.
B. Test Reports
1. Submit certified copies of all test reports.
2. All inspection and testing shall be performed by the pipe and fittings manufacturers as required to meet the Current AWWA C-900 Standard. Test reports of all tests shall be submitted with the shop drawings by the Contractor.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:
A. Exercise care in transporting and handling to avoid damage to pipe and fittings. Follow manufacturer's recommendations.
B. Store materials on site in enclosures or under protective coverings. Do not allow pipe to warp or sag.
C. Do not store materials directly on the ground.
D. Keep inside of pipes and fittings free of dirt and debris.

1.06 JOB CONDITION:
1.05 JOB CONDITION:
A. Do not install pipe and fittings in inclement weather conditions, which prevent a clean installation.
B. Contractor to be familiar with job site conditions.
C. Contractor to maintain at least one-way traffic at all times for all work.

PART 2 - PRODUCTS

2.01 PIPE:

A. Polyvinyl Chloride (PVC) Pressure Pipe
1. For water mains: PVC 1120 Pressure Pipe, the Current AWWA C-900 Standard, cast-iron pipe outside diameter, wall thickness of DR series 14 Pressure Class at Factor of Safety 2.5 is 200 psi, push-on gasketed joint (exterior buried use).

2.02 FITTINGS:
A. Material
1. PVC: PVC 1120, push-on gasketed joints, the Current AWWA C-900 Standard, cast-iron pipe outside diameter, wall thickness of DR series 14 Pressure Class at Factor of Safety 2.5 is 200 psi (exterior buried use).
(a) All joint types
(1) ANSI A21.53 (latest version)
(b) Pressure rating = 350psi, all sizes.

2.03 GASKETS:
A. Polyvinyl Chloride (PVC)
1. For water mains: push-on gasketed joint, elastomeric gasket, the Current AWWA C-900 Standard and ASTM F-477 (exterior buried use).

2.04 JOINT LUBRICATION:
A. For Polyvinyl Chloride (PVC) Pipe and Fittings
1. Push-on gasketed joint: As recommended by the Current AWWA C-900 Standard and manufacturer of pipe or fittings (exterior buried use).

2.05 METALLIC DETECTOR TAPE:
A. Detector Tape shall consist of a minimum thickness 1-mil metallic foil case, encased in a protective polyethylene jacket, highly resistant to alkalis, acid or other destructive chemical components likely encountered in soils.
1. Tape shall be blue on one side and shall have printed on there the following:

"CAUTION BURIED WATER LINE BELOW"
2. The identifying lettering shall be repeated the full length of the tape.
3. Tape width - minimum size is three (3) inches.
4. Tape shall be installed four inches (4") to six inches (6") below final grade.

PART 3 - EXECUTION

3.01 INSPECTION:
A. Any defective pipe or gaskets shall be rejected.
B. Examine areas to receive piping for
1. Defects that adversely affect execution and quality of work.
2. Deviations beyond allowable tolerances of piping clearances.
C. Pipe to be kept clean
1. All foreign matter or dirt shall be removed from the inside of the pipe and fittings before they are lowered into their trench position and then shall be kept clean by approved means during and after laying.

3.02 INSTALLATION:

A. Pipe Installation
1. Horizontal Piping, Underground
(a) Lay piping on a firm bed for the entire trench length as indicated on the Contract Drawings. Blocking of pipe will not be permitted. Except as otherwise specified PVC pressure waterpipe shall be installed in accordance with AWWA Manual of Practice, M23.
(b) Pipe shall be laid with bell ends facing in the direction of laying, unless directed otherwise by the Engineer. Where pipe is laid on a grade of 5% or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe upgrade.
(c) Every precaution shall be taken to prevent foreign materials from entering the pipe while it is being placed in the line. If the pipelaying crew cannot put the pipe and fittings into the trench and in place without getting foreign material into it, the Engineer shall require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size be placed over each end and left there until connection is to be made to the adjacent pipe.
(d) At times when pipelaying is not in progress, the open ends of installed pipe shall be closed by a watertight plug.
(e) Unsuitable Conditions for Laying Pipe: No pipe shall be laid in water or when the trench conditions or the weather are unsuitable for such work. No water shall be permitted to enter the pipe.
2. Casings: PVC Pressure Water Pipe installed in casings, shall be mounted in casings. Pipe bells shall not rest on pipe. Install skids according to AWWA M23 standards.
CAUTION: Do not use petroleum products (oil, grease, etc.) that can cause damage to the PVC pipe or gaskets. Do not use creosote to treat wooden skids. Use wood preservative safe to PVC and gaskets.

B. Joining of PVC/Plastic Pipe and Fittings
1. Cutting
(a) Cut plastic pipe with a hand saw.
(b) Make cuts square with pipe.
(c) Remove burrs by smoothing edges with a knife, file or sandpaper.
(d) Bevel edges as recommended by manufacturer.
2. Joint Types
(a) PVC Pipe: Push-on gasketed (exterior buried use).
3. Joint Workmanship
(a) Push-on gasketed joints: As recommended by manufacturer of pipe or fittings.
4. Junction with Other Materials: Use type of adapter and technique recommended by pipe manufacturer.
5. All mechanical joint fittings shall utilize proper type and size retainer glands, "Mega-Lug" or equal.

C. Testing (Exterior):
Refer to additional sections of these Specifications for pressure and leakage testing as well as disinfection.

SECTION 02615 - INTERCONNECTIONS WITH EXISTING WATER MAINS

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required, and interconnect all new water mains with existing water mains as shown on the Contract Drawings and as specified herein.
B. General
1. This Specification is to cover any temporary interconnections as well as permanent interconnections.
1.02 QUALITY ASSURANCE:
Clean, neat installations disinfested in accordance with AWWA C651 (latest revision).
1.03 JOB CONDITIONS:
Contractor shall test pits at all locations of temporary or permanent interconnection locations as directed by the Engineer to become totally familiar with existing conditions and materials, equipment, appurtenances, etc. that will be necessary to make said interconnections.
1.04 TIMING:
All interconnections must be scheduled a minimum of 48 hours before actual work is to be done.
B. Contractor must notify all residents to be affected by the work at least 24 hours prior to the work being done.
C. Contractor must perform work only on days and at times approved by the Engineer and the Owner.

PART 2 - PRODUCTS
1.01 INSPECTION:
The Contractor shall inspect all interconnection areas prior to actual interconnection work.
1.02 PREPARATION:
A. Materials and Equipment on Hand
1. The Contractor shall obtain and have at the job site all materials and equipment to make the interconnections prior to beginning work for each interconnection.
B. The Contractor shall "break" the trench in accordance with AWWA C651 (latest revision).
C. The Contractor shall disinfest all materials to be installed in accordance with AWWA C651 (latest revision). Continuous feed or slug method shall be used. The test method is not acceptable.
1.03 PERFORMANCE:
A. Make interconnection, restrain fittings and appurtenances, pour thrust blocks and flush so as to have service uninterrupted for as short a period of time as possible.
B. Place into operation.
C. Backfill only after approval of the Engineer.
1.04 ADJUST:
A. After placing into operation but prior to backfilling, inspect each interconnection for soundness, workmanship, leaks, etc.

SECTION 02675 - DISINFECTION OF DOMESTIC WATER LINES & FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required, and disinfest (chlorinate) all domestic water piping systems and facilities as specified herein after pressure testing but prior to placing the systems into operation.
(a) Work to include:
(1) Disinfection
(2) Residual testing
(3) Complete flushing.
1.02 QUALITY ASSURANCE:
A. Reference Standards
1. Disinfection of all domestic water pipeline systems and facilities shall be carried out in accordance with AWWA C651 (latest revision) entitled "AWWA Standard for Disinfecting Water Mains".
2. Disinfection of the storage facility shall be carried out in accordance with AWWA C652 (latest revision) entitled "AWWA Standard for Disinfection of Water - Storage Facilities".
1.03 NOTIFICATION:
The Contractor shall notify the Engineer at least 48 hours in advance of beginning any disinfection of water main or facilities.
1.04 SUBMITTALS:
A. Samples
1. The Contractor shall provide for and take all samples for bacteriological testing as required by this Specification and Reference Standards included therein. Samples shall be submitted

to the State of Vermont, Department of Health laboratories or another Vermont certified lab. Copies of all results shall be furnished immediately upon receipt to the Engineer. Two (2) negative bacteriological tests, taken at 24 hour intervals, are required before the piping or facilities are to be accepted and put into service.

PART 2 - PRODUCTS

2.01 None this section.
PART 3 - EXECUTION
3.01 PREPARATION:
A. Contractor shall construct any required corporation stops, goose-necks or any and all other appurtenances necessary, at his/her own expense, to carry out the disinfection work as specified.
B. Flush all pipeline systems prior to disinfecting.
3.02 PERFORMANCE:
A. Disinfest all new pipeline systems and facilities in accordance with AWWA C651 (latest revision) and AWWA C652 (latest revision), including
1. Form of chlorine utilized
2. Method of chlorine application
3. Final flushing
4. Bacteriological testing
5. Repetition of procedure.
B. Chlorinate with the continuous feed method or slug method in accordance with AWWA C651 (latest revision). The slug method is not an acceptable method.
3.03 DISCHARGE OF CHLORINATED WATER:
A. The Contractor shall not discharge heavily chlorinated water (> 2ppm) without first neutralizing the chlorinated water. The Contractor shall use the H2O neutralizer by Measurement Technologies, Inc. or equal. This tool shall use differential pressure to create a vacuum to allow for a de-chlorination solution to be added to the discharging water.
B. Disinfect all new pipeline systems and facilities in accordance with AWWA C651 (latest revision) and AWWA C652 (latest revision), including
1. Form of chlorine utilized
2. Method of chlorine application
3. Final flushing
4. Bacteriological testing
5. Repetition of procedure.

SECTION 07240 - ROOF INSULATION (Buried Pipe)

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required to install all buried insulation for pipelines and structures as specified herein, as shown on the Contract Drawings.
1.02 QUALITY ASSURANCE:
A. Acceptable Manufacturers
1. U.G. Industries, or equal.
1.03 PRODUCT DELIVERY, STORAGE AND HANDLING:
A. Deliver, store, and handle insulation to prevent damage there to:
1. Properly damaged or cracked materials.
1.04 JOB CONDITIONS:
A. Buried insulation to be installed
1. Where shown on the Contract Drawings.
2. As required by field conditions.

PART 2 - PRODUCTS

2.01 BOARD INSULATION:

A. Conform to Federal Specifications HH-1524C, Type IV.
B. Rigid thermal insulation: Foamular 250 (Tongue & Groove), or equal
1. 24 inch wide by 60 inches long
2. Minimum compressive strength 25 psi
3. Maximum water vapor transmission rate of 1.1 perms per inch.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Pipeline
1. Backfill pipeline trenches and compact where board insulation is required to 3 inches over the top of the pipe. Backfill and compact as required by other Sections of these Specifications.
2. Smooth top of backfill materials to receive board insulation.
3.02 INSTALLATION:
A. Lay two (2) layers of continuous board insulation full width of trench (total in-place thickness as shown on drawings).
1. Stagger joints so that no joints of the two (2) layers are one over the other.
2. Cut and fit as required.
B. Continue field testing operations as specified elsewhere so as to prevent damage to installed insulation.

SECTION 15101 - GATE VALVES

PART 1 - GENERAL

1.01 DESCRIPTION:
A. Work Included
1. Furnish all labor, materials, equipment, and incidentals required to install all exterior and interior gate valves as specified herein and as shown on the Contract Drawings.
1.02 QUALITY ASSURANCE:
A. Acceptable Manufacturers
1. Resident Seat Gate Valves: Waterous, Kennedy, U.S. Pipe, or equal.
1.03 SUBMITTALS:
A. Shop Drawings of Valve and Operators
1. Dimensions and weights.
2. Construction details.
3. Materials.
4. Manufacturer's literature and illustrations.
5. Submit manufacturer's certifications that valves and accessories meet or exceed Specification requirements.
B. Installation, Operating and Maintenance Instruction
1. Complete manufacturer's installation instructions.
2. Operating and Maintenance instructions.
3. Parts lists.
1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:
A. Prepare valves and accessories for shipments according to AWWA C505 or C515 (latest revision), and as follows:
1. Seal valve ends to prevent entry of foreign matter into valve body.
2. Box, crate, completely enclose, and protect valves and accessories from accumulations of foreign matter.
B. Store valves and accessories in area protected from weather, moisture, and possible damage.
C. Do not store materials directly on ground.
D. Handle items to prevent damage to interior or exterior surfaces.

PART 2 - PRODUCTS

2.01 IRON-BODY GATE VALVES (all applications):

A. AWWA C-509 or C-515 (latest revision).
B. Stem Construction
1. Non-rising, unless otherwise noted on Contract Drawings.
C. Stem Seals
1. Double O-ring.
D. Gate
1. C.I. resilient wedge with synthetic elastomer coating.
2. C.I. shall be epoxy coated (fusion bonded) inside and out.
E. Bonnet Hardware
1. Stainless Steel.
F. End Connection
1. As required for application and/or as shown on the Contract Drawings.
G. Operation
1. Direction of rotation to open
(a) Counter-clockwise with operator marked to show direction to open.
2. Type of Operator
(a) As indicated on Contract Drawings.
H. Coating
1. Interior and exterior
(a) Epoxy (fusion bonded).
I. Gate Box Aligner (Disk)
1. Keeps valve box aligned during backfilling.
2. Mounts on valve stem and automatically centers the valve box base around the operating nut, preventing the backfill material from interfering with the valve operation while still allowing surface water to drain out.
3. Assures that surface debris that enters the valve box quickly and easily flushes out using air or water.
(a) High-strength plastic construction
(b) 6-inch Diameter x 1 1/4-inch Height with 1-inch shaft hole and 1 1/4-inch cutout step for standard valve box bell base.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Install valves and accessories in accordance with manufacturer's instructions.
B. Anchorage
1. Provide thrust restraint as shown on the Contract Drawings.
2. All mechanical joint gate valves shall be installed utilizing restrained joint glands, "Mega-Lug" or equal.
3.02 ADJUSTMENTS:
A. Check and adjust valves and accessories for smooth operation.

CONSTRUCTION NOTES

1. TRAFFIC CONTROL
A. ONE-WAY TRAFFIC WILL BE MAINTAINED AT ALL TIMES ON TOWN HIGHWAYS UNLESS OTHERWISE NOTED.
2. BURIED UTILITIES
A. UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE ONLY. THOSE SHOWN ON THE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL MEET WITH THE ENGINEER, OWNER AND REPRESENTATIVES OF THE WATER DEPARTMENT, TELEPHONE COMPANY, ELECTRIC COMPANY, GAS COMPANY, SEWER DEPARTMENT AND ANY OTHER UTILITIES THAT MAY BE INVOLVED WITH THE CONSTRUCTION PROJECT TO COORDINATE THE MARKING AND TIMING OF DISRUPTIONS OF VARIOUS UTILITIES. IF ANY, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ANY UTILITY LOCATION OR ELEVATION.
B. THE CONTRACTOR SHALL EXCAVATE TEST PITS AS SHOWN ON THE DRAWINGS OR AS APPROVED BY THE ENGINEER. THESE SHALL BE EXCAVATED TO LOCATE BURIED UTILITIES AND TO DETERMINE SIZE, LOCATIONS AND/OR MATERIALS OF EXISTING UTILITIES. SOME HAND EXCAVATION MAY BE NECESSARY TO PROTECT UTILITIES. TEST PITS SHALL BE EXCAVATED AT LEAST TWO (2) WEEKS PRIOR TO CONSTRUCTION SO THAT DESIGN REVISIONS MAY BE MADE IF REQUIRED.
C. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR REPAIR OF ANY SUCH DAMAGE AS QUICKLY AS POSSIBLE AT HIS/HER OWN EXPENSE. THE CONTRACTOR SHALL MAINTAIN A SUPPLY OF REPAIR MATERIALS AND PIPE ON THE JOB SITE AT ALL TIMES IN ORDER TO MINIMIZE THE INCONVENIENCE CAUSED BY SUCH DAMAGE.
D. THE CONTRACTOR SHALL PERMANENTLY PLUG ALL EXISTING LINES WHICH ARE REPLACED BY NEW ONES AT THE POINT WHERE THEY ARE DISCONNECTED UNLESS THEY ARE TO REMAIN IN SERVICE.
3. CONSTRUCTION
A. THE CONTRACTOR SHALL USE ONLY DESIGNATED BENCH MARKS FOR REFERENCE ELEVATIONS.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HOLDING UTILITY POLES AS NECESSARY.
C. EXISTING WATER SERVICE SHALL BE MAINTAINED DURING CONSTRUCTION. THE NEW SYSTEM SHALL BE TESTED, INSPECTED, CHLORINATED AND ITS USE AUTHORIZED PRIOR TO TRANSFERRING SERVICE TO THE NEW SYSTEM. NO FLOW SHALL BE ALLOWED IN THE NEW SYSTEM UNTIL AUTHORIZED BY THE OWNER.
D. ADDITIONAL FITTINGS & BENDS AS NECESSARY, SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST IN ORDER TO FURNISH A COMPLETE & FUNCTIONAL FACILITY.
E. EXISTING WATER MAINS ARE UNDER PRESSURE. THE CONTRACTOR IS ADVISED TO TAKE PRECAUTIONS TO AVOID BLOWING OUT OF EXISTING WATER MAINS FROM THE SIDES OF TRENCHES DURING CONSTRUCTION. TEMPORARY SHEETING AND BRACING MAY BE REQUIRED.
4. RECORD DRAWINGS
A. ALL BURIED UTILITIES ENCOUNTERED SHALL BE DOCUMENTED WITH DEPTH AND THREE (3) TIES AND SHOWN BY THE CONTRACTOR ON RECORD DRAWINGS.
B. ALL NEW VALVES, FITTINGS, CURB STOPS AND CORPORATION STOPS SHALL BE DOCUMENTED WITH THREE (3) TIES AND SHOWN BY THE CONTRACTOR ON THE RECORD DRAWINGS. THESE TIES SHALL IMMEDIATELY BE PROVIDED TO THE ENGINEER.

COLD WEATHER CONSTRUCTION PROCEDURES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTINUOUSLY PROTECT SOILS, CONCRETE AND OTHER MATERIALS FROM DAMAGE DUE TO COLD TEMPERATURES, UNTIL THE STRUCTURE HAS BEEN TURNED OVER TO THE OWNER. THIS SHALL INCLUDE TEMPORARY ENCLOSURES, INSULATED BLANKETS AND TEMPORARY HEATING.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE ANY DAMAGED OR DEFECTIVE WORK, IN A MANNER REVIEWED BY THE ENGINEER.
3. ALL PROTECTIVE AND CORRECTIVE WORK SHALL BE PERFORMED AT THE EXPENSE OF THE CONTRACTOR.

SAFETY AND PROTECTION

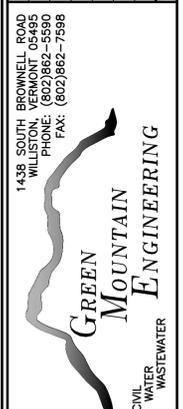
CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PROTECTION TO PREVENT DAMAGE, INJURY OR LOSS TO:
1. ALL EMPLOYEES ON THE WORK SITE AND OTHER PERSONS WHO MAY BE AFFECTED THEREBY.
2. ALL THE WORK AND ALL MATERIALS OR EQUIPMENT TO BE INCORPORATED THEREIN, WHETHER IN STORAGE ON, OR OFF, THE SITE, AND
3. OTHER PROPERTY AT THE SITE OR ADJACENT THERETO, INCLUDING TREES, SHRUBS, LAWN, WALKS, PAVEMENTS, ROADWAYS, STRUCTURES AND UTILITIES NOT DESIGNATED FOR REMOVAL, RELOCATION OR REPLACEMENT IN THE COURSE OF CONSTRUCTION.
CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STANDARDS (SPECIFICALLY INCLUDING OSHA, VOSH AND ANY OTHER STATE ADOPTED OSHA PROGRAM), LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY OR TO PROTECT THEM FROM DAMAGE, INJURY OR LOSS, AND SHALL ERECT AND MAINTAIN ALL NECESSARY SAFEGUARDS FOR SUCH SAFETY AND PROTECTION. CONTRACTOR SHALL NOTIFY OWNERS OF ADJACENT PROPERTY AND UTILITIES WHEN EXCAVATION OF THE WORK MAY AFFECT THEM.
CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR THE SAFETY AND PROTECTION OF THE WORK SHALL CONTINUE UNTIL SUCH TIME AS THE WORK IS COMPLETED AND ACCEPTED BY THE OWNER.

EROSION CONTROL PLAN & CONSTRUCTION SEQUENCE

A. CONSTRUCTION SEQUENCE

1. A PRECONSTRUCTION CONFERENCE SHALL BE HELD TO REVIEW THE PROJECT PLANS, EROSION CONTROL ISSUES AND WETLANDS IN DETAIL. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING IMPACTS TO WETLANDS AND CONTROLLING EROSION AT THE SITE. INSTALLING ALL MEASURES AS SHOWN ON THE PLAN AND ANY ADDITIONAL MEASURES REQUIRED BY REGULATORY OFFICIALS. ADDITIONALLY, THE CONTRACTOR SHALL HAVE EROSION CONTROL MATERIALS AND INSTALLATION EQUIPMENT AVAILABLE AT ALL TIMES AND SHALL GIVE HIGH PRIORITY TO THE DAILY AND TIMELY INSTALLATION OF BOTH TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH "VERMONT HANDBOOK FOR SOIL EROSION AND SEDIMENT CONTROL ON CONSTRUCTION SITES", 1982, REVISED 1987. THE CONTRACTOR SHALL HAVE ACCESS TO THIS HANDBOOK. THESE NOTES AND THE A.N.R. D.E.C. WETLANDS FACT SHEET #14.
2. PRIOR TO CONSTRUCTION, THE LIMITS OF CLEARING AND/OR DISTURBANCE SHALL BE ESTABLISHED BY THE CONTRACTOR BASED ON THE REQUIRED WIDTHS SHOWN IN THE PROJECT PLANS. THE LIMITS SHALL BE REVIEWED IN THE FIELD BY THE ENGINEER, PRIOR TO ANY EARTHWORK. THE INTENT IS TO MINIMIZE THE AMOUNT OF CLEARING AND THE AMOUNT OF GROUND COVER DISTURBANCE. CONTRACTOR SHALL INSTALL SNOW FENCE (COMBINED WITH SILT FENCE) IN SENSITIVE AREAS (WETLANDS) TO KEEP EQUIPMENT OUT OF THESE AREAS. CONSIDERATION SHALL BE GIVEN TO CHIPPING OF BRUSH AND BRANCHES FOR USE AS MULCH TO HELP STABILIZE DISTURBED AREAS. NO STUMPS SHALL BE BURIED OTHER THAN AS SHOWN ON THE PLANS.
3. THE SILT FENCE AND SNOW FENCE SHALL BE INSTALLED PRIOR TO BEGINNING CONSTRUCTION. THESE AREAS ARE CONSIDERED TO HAVE THE HIGHEST POTENTIAL FOR EROSION DUE TO THE PROXIMITY TO WETLANDS OR STREAMS. RESTORATION (TOPSOIL, RAKING, SEED, FERTILIZER, AND MULCH) MEASURES IN THESE AREAS IS CRITICAL AND SHALL BE COMPLETED WITHIN 48 HOURS OF FINAL GRADING. INSTALLATION AND ANCHORING OF JUTE (OR OTHER BIODEGRADABLE NETTING OVER MULCHED AREAS MAY BE REQUIRED. IN NO CASES SHALL WORK BE DONE IN THESE AREAS BETWEEN OCTOBER 15TH AND MAY 1ST.
4. ALL DISTURBED AREAS SHALL HAVE TOPSOIL SPREAD AND RAKED OUT (4 INCHES MIN) AND BE FERTILIZED, SEEDED AND MULCHED AS SOON AS WORK ALLOWS. AT A MINIMUM, ALL DISTURBED AREAS ARE TO BE MULCHED WITHIN 7 CALENDAR DAYS OF DISTURBANCE.
5. PARTICULAR ATTENTION SHALL BE GIVEN TO MAINTAINING THE STABILITY OF DOWN GRADIENT AREAS AND RUNOFF CONTROL. WHERE POSSIBLE, ALWAYS AVOID CONCENTRATION OF STORMWATER RUNOFF.
6. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED ON A DAILY BASIS. IF REPAIRS OR ADDITIONAL MEASURES ARE REQUIRED THEY SHALL BE COMPLETED THE SAME DAY IN THE EVENT THAT A STORM IS FORECAST. ADDITIONAL MEASURES SHALL BE TAKEN TO PREPARE THE SITE, INCLUDING EXTRA EROSION CONTROL DEVICES OTHER THAN AND ADDITIONAL TO THOSE SHOWN ON THE PLANS, IMMEDIATELY FOLLOWING ANY STORM EVENT THE DEVICES SHALL BE INSPECTED AND CLEANED ACCORDINGLY.
7. ADDITIONAL MEASURES FOR EROSION CONTROL MAY BE REQUIRED OTHER THAN THOSE SHOWN ON THE PLANS, IN ORDER TO PROTECT THE RESOURCES.
8. UPON COMPLETION OF CONSTRUCTION AND ONCE ALL PERMANENT VEGETATIVE COVER IS FIRMLY ESTABLISHED, ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED.

BRANDING TITLE: WATER AND CONSTRUCTION NOTES
PROJECT: WEST MAIN 4-INCH WATER MAIN REPLACEMENT
CLIENT: TOWN OF RICHMOND, VERMONT
DESIGNED: AH 02/17/16
DRAWN: BPC 1" = 20'
CHECKED: AH JAN. 2016
PROJECT NO. 26W-001
DRAWING NO. 3
SHEET 3 OF 3



TOWN OF RICHMOND
LIQUID NET ASSETS
6/30/2019

WATER FUND

6/30/2019

ASSETS:		
	CHECKING ACCOUNT	635,381.69
	PREPAID EXPENSES	2,594.90
	ACCTS RECEIVABLE WATER	97,455.19
	MISC RECEIVABLES	3,260.10
LIABILITIES:		
	DUE FROM/TO OTHER FUNDS	(463,741.69)
	ACCOUNTS PAYABLE	(12,603.56)
	ACCRUED INTEREST PAYABLE	(4,269.07)
	ACCRUED WAGES 30%	(1,518.02)
	ACCRUED VACATION 30%	(2,270.78)
FUND BALANCES:		
	FB SHORT TERM CAP RESERVE	(55,575.00)
	FB WATER CAPITAL RESERVE	(21,069.51)
	FB DISTRIBUTION SYST RESE	(52,702.18)
		\$ 124,942.07

	Projection for June 30, 2020	Budgeted FY20 Contribution	FY20 Expenditures
FB SHORT TERM CAP RESERVE	75,575.00	20,000.00	
FB WATER CAPITAL RESERVE	53,742.51	35,237.00	(2,564.00) Pickup Truck
FB DISTRIBUTION SYST RESE	67,702.18	15,000.00	

TOWN OF RICHMOND

LIQUID NET ASSETS

6/30/2019

SEWER/PHOSPHORUS FUND

ASSETS:

DUE FROM/TO OTHER FUNDS	483,881.32
ACCTS RECEIVABLE SEWER	129,087.53
ACCOUNTS RECEIVABLE SEPTA	59,656.50

LIABILITIES:

ACCOUNTS PAYABLE	(46,082.81)
ACCRUED INTEREST PAYABLE	(3,946.94)
ACCRUED WAGES 70%	(3,542.06)
ACCRUED VACATION 70%	(5,298.50)

FUND BALANCES:

FB SHORT TERM CAP RESERVE	(53,521.63)
FB COLLECTION SYS RESERVE	(78,404.88)
FB WASTEWATER CAP RESERVE	(331,572.25)

<u>\$</u>	<u>150,256.28</u>
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	Projection for June 30, 2020	Budgeted FY20 Contribution	FY20 Expenditures	
FB SHORT TERM CAP RESERVE	85,497.63	43,000.00	(11,024.00)	Critical wastewater items
FB COLLECTION SYS RESERVE	87,629.88	10,000.00	(775.00)	New air blower motor
FB WASTEWATER CAP RESERVE	355,769.25	30,180.00	(5,983.00)	Pickup Truck

GREEN MOUNTAIN ENGINEERING, INC.

*1438 South Brownell Road
Williston, VT 05495-7274
(802) 862-5590 (Fax) 862-7598*

October 13, 2020

Mr. Josh Arneson
Town Manager
Town of Richmond, Vermont
P.O. Box 285
Richmond, Vermont 05477

RE: West Main Street – 4" Waterline Replacement (Amendment #1)
GME Project No. 26-001

Dear Mr. Arneson:

This AMENDMENT is written pursuant to a change in the Scope of Services to be provided by Green Mountain Engineering, Inc., (CONSULTANT) as the Town of Richmond, Vermont's (CLIENT) consultant for the civil engineering assistance for the 4" waterline replacement design and construction on West Main Street in Richmond, Vermont.

SCOPE OF SERVICES

The project was originally designed and permitted in 2016 but was never bid or constructed. Costs for this Scope of Services are a result of the need to verify the acceptability of the 2016 design (as necessary) based on updated input from Town staff, renewal of the expired VTAOT permit required to conduct work in the Route 2 Right of Way, update and revise the construction cost estimate to account for any modifications, assemble bid documents and construction specifications. GME anticipates the bid and construction phase tasks to provide bid services in accordance with Town purchasing standards, provide bid review and award services, provide resident engineering services during construction, as well as providing the required certification documents and record drawings will be conducted in 2021 and proposes to perform these services for the original budgeted amount as shown below.

BASIS OF COMPENSATION

The Basis of Compensation for the above-referenced items is revised as follows:

Mr. Josh Arneson
October 13, 2020

<u>Final Design Items</u>	<u>Original Contract</u>	<u>Amendment No. 1</u>
A. Basic Services	\$ 5,200.00	\$4,000 (Lump Sum)
B. Ancillary Services:		
1. Permitting Assistance	525.00	\$ 400 (N-T-E)
Subtotal	\$ 5,725.00	\$4,400

<u>Bid and Construction Phase Items</u>	<u>Cost</u>	
C. Bid Phase Services	\$ 1,000.00	No Change (Lump Sum)
D. Basic Services	1,500.00	No Change (Lump Sum)
E. Resident Services	7,730.00	No Change(N-T-E)
F. Special Services:		
1. Record Drawings	<u>1,000.00</u>	No Change (N-T-E)
Subtotal	\$ 11,230.00	
TOTAL	\$ 16,955.00	\$4,400
TOTAL with Amendment No. 1		\$ 21,355.00

All other provision of the AGREEMENT dated January 8, 2016 shall remain in effect.

If this AMENDMENT is acceptable, please sign both copies and return one of them to our office, in the enclosed envelope, to confirm our amended AGREEMENT.

Respectfully,

GREEN MOUNTAIN ENGINEERING, INC.


Alan Huizenga, P.E.
President

ACKNOWLEDGMENT

Josh Arneson, Town Manager

Date of Execution