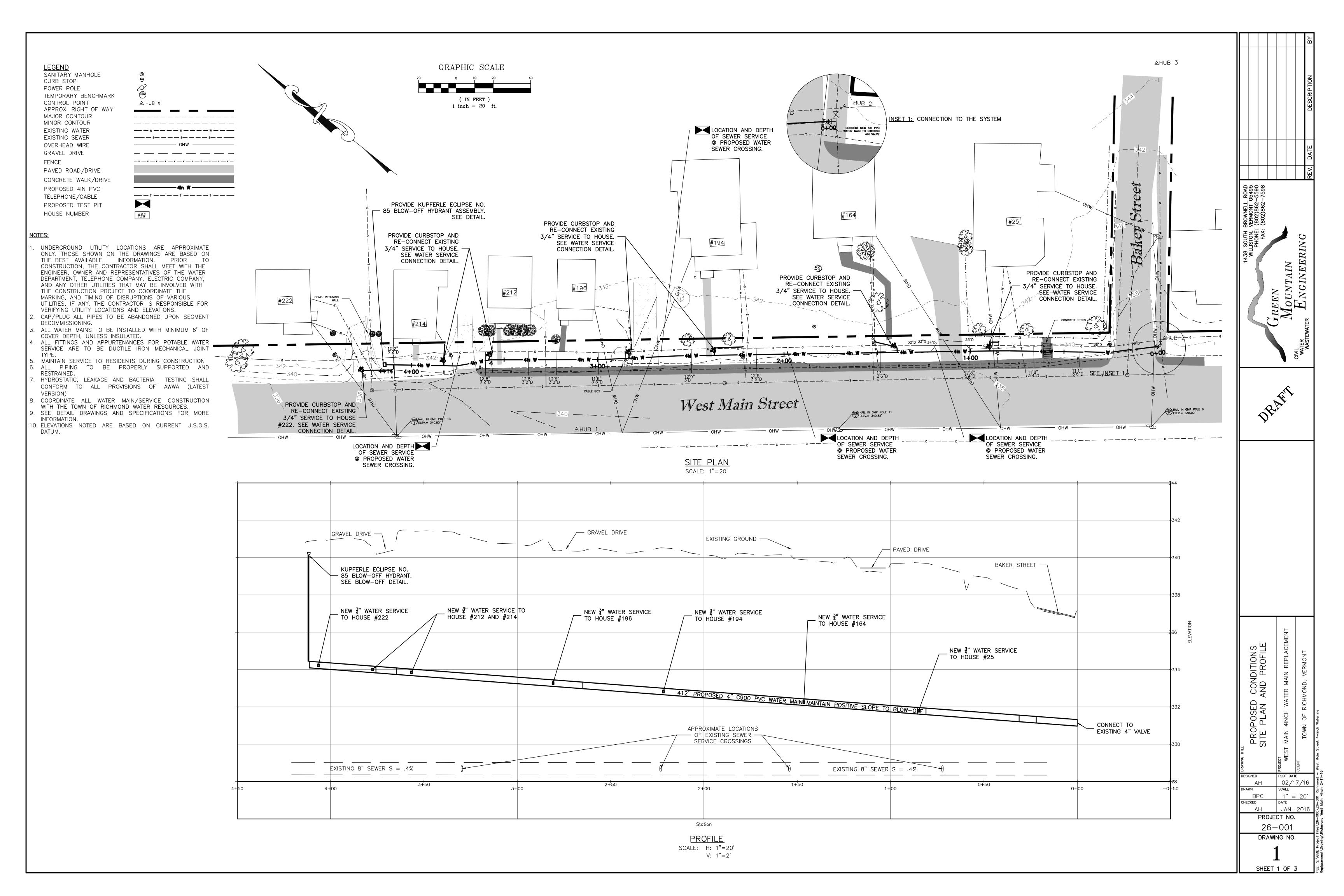
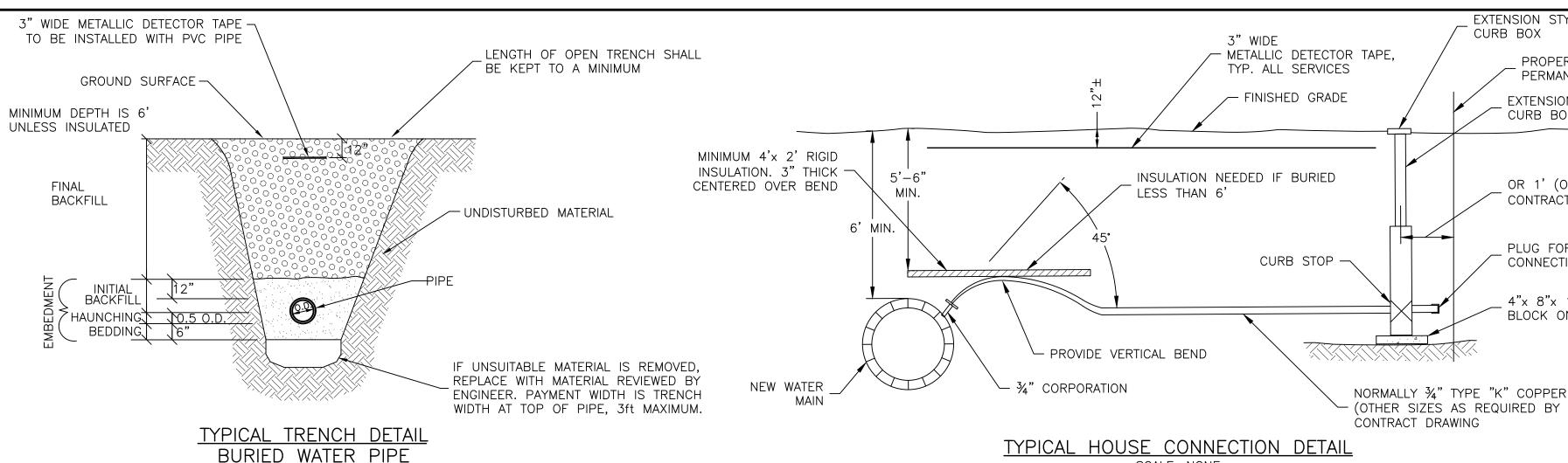
Opinion of Probable Construction Costs Town of Richmond, VT - West Main Street 4" Waterline Replacement Project Prepared By: GME Prepared: 10/13/2020 UNIT **TOTAL DESCRIPTION** QTY. **PRICE AMOUNT UNIT** A - WATER MAINS & SERVICES A-1 - 4" Dia. PVC C900 Water Line l.f. 415 \$80.00 \$33,200.00 A-2 - 2" 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 7 \$600.00 \$4,200.00 ea. 1 \$700.00 B-2 - 2" Dia. Curb Stop (Millet St) \$700.00 ea. 7 B-3 3/4" Dia. Corp Stops \$600.00 \$4,200.00 ea. B-4 - 8" x 2" Wet Tap (Millet St) 1 \$1,500.00 \$1,500.00 ea. B-5 - Blowoff Hydrant 1 \$500.00 \$500.00 ea. B-6 - Decomission and Abandon Existing Water 1 \$2,500.00 \$2,500.00 ea. System C - EARTH WORK C-1 - Exploratory Excavation (test pits as 2 \$1,500.00 \$3,000.00 ea. necessary) D - ROAD, SIDEWALK, DRIVE CONSTRUCTION D-1 - Gravel Road / Driveway / Pavement 65 \$10.00 \$650.00 s.y. Removal D-2 - Gravel Driveway Repair \$25.00 \$750.00 s.y. 30 D-3 - Bituminious Repair - Street 25 \$100.00 \$2,500.00 s.y. D-3 - Bituminious Repair - Drive's/Walks 20 \$100.00 \$2,000.00 s.y. D-4 - Repace concrete steps l.s. 1 \$1,500.00 \$1,500.00 D-5 - Overland Surface Restoration 250 \$21.00 \$5,250.00 s.y. E - INCIDENTAL WORK E-1 - Rigid Trench Insulation 200 \$5.00 \$1,000.00 s.f. E-2 - Traffic Control 40 \$120.00 Hour \$4,800.00 E-4 - Erosion Control 1 \$1,000.00 l.s. \$1,000.00 F-3 - Mobilization/Demobilization 1 \$10,000.00 \$10,000.00 l.s. F - PROJECT ADMINISTRATION F-1 - Bonds \$1,200.00 \$1,200.00 1 l.s.





SCALE: NONE

1. NO MECHANICAL TAMPERS SHALL BE USED DIRECTLY OVER PIPE TO INSURE THE PIPE IS NOT DAMAGED.

TRENCH NOTES

- 2. ROCK EXCAVATION PAY LIMITS: ROCK EXCAVATION PAYMENT IS INCLUDED IN BID ITEM PROVIDED IN SCHEDULE OF PRICES.
- 3. EMBEDMENT MATERIALS SHALL BE TESTED AND SHOWN BY THE CONTRACTOR TO MEET THE REQUIREMENTS OF SPEC. SECTION 02220.
- 4. MATERIALS SHALL BE PLACED IN MAXIMUM 6in LAYERS AND COMPACTED TO ACHIEVE NOT
- 5. FINAL BACKFILL (SUITABLE MATERIALS) SHALL NOT CONTAIN ANY STONES MORE THAN 12in IN LARGEST DIMENSION, BE GREATER THAN 501bs, OR CONTAIN ANY FROZEN, WET, OR ORGANIC MATERIALS.

LESS THAN 90% (95% IN ROADS) OF MAXIMUM DENSITY (STANDARD PROCTOR DENSITY).

- 6. WIDTH OF TRENCH AT SURFACE SHALL BE KEPT AS NARROW AS PRACTICAL.
- 7. PAYMENT UNDER THE ITEMS OF WORK SPECIFIED IN THE CONTRACT DOCUMENTS IS TO THE LIMITS SHOWN.
- 8. TRENCHES SHALL BE COMPLETELY DEWATERED PRIOR TO PLACEMENT OF PIPE BEDDING MATERIAL AND BE KEPT DEWATERED DURING INSTALLATION OF PIPE, EMBEDMENT MATERIALS, AND INITIAL BACKFILL.
- 9. PERMANENT SHEETING SHALL BE INSTALLED ONLY IF REQUIRED BY JOB CONDITIONS.
- 10. SEE SPECIFICATIONS SECTION 02220; EXCAVATION, BEDDING, BACKFILL AND FILL FOR MORE COMPLETE MATERIALS SPECIFICATION.

THE FOLLOWING EMBEDMENT MATERIALS MAY BE USED FOR D.I.

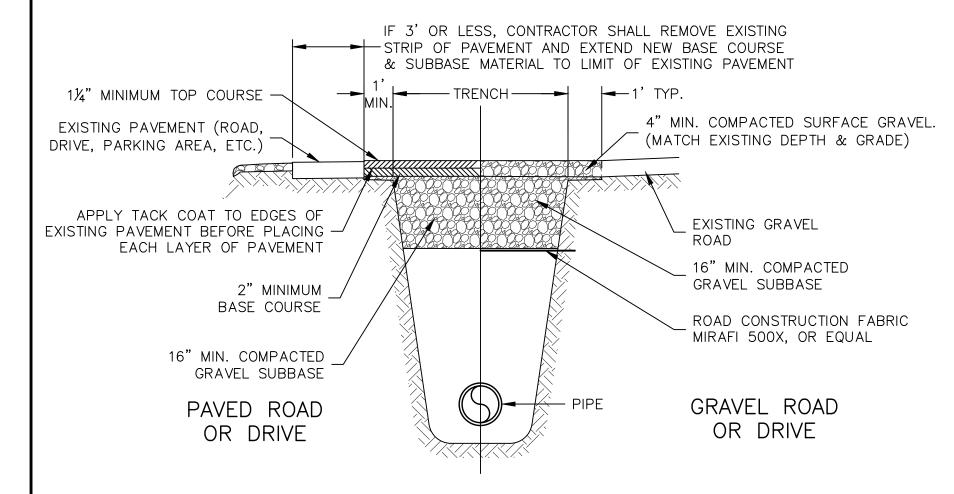
MANUFACTURED GRANULAR MATERIAL, MAXIMUM PARTICLE SIZE = 1½"

COARSE SANDS AND GRAVELS, MAXIMUM PARTICLE SIZE OF 11/2", GENERALLY GRANULAR AND NON-COHESIVE.

MIXED GRAIN SOILS: FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS, SANDY-CLAY MIXTURES AND GRAVEL-CLAY MIXTURES. MAXIMUM PARTICLE SIZE = 11/2".

THE FOLLOWING EMBEDMENT MATERIALS MAY BE USED FOR PVC, PE, & COPPER PIPE

SAND: 90-100 PERCENT PASSING THROUGH A HALF-INCH (%") SIEVE AND NOT MORE THAN 15 PERCENT PASSING THROUGH A No. 200 SIEVE.



TYPICAL TRENCH PAVEMENT/GRAVEL REPAIR

NOTES PAVED ROADS/DRIVES:

NOTES FOR GRAVEL ROADS/DRIVES:

- ALL PAVEMENT SHALL HAVE A MINIMUM COMPACTED THICKNESS AS SHOWN.
- KEEP TRENCH SURFACE AS NARROW AS PRACTICAL. THE EDGE OF EXISTING PAVEMENT SHALL BE TRIMMED STRAIGHT AND SQUARE PRIOR
- TOP PLACING EACH LAYER OF PAVEMENT. A MINIMUM OF 1' SHALL BE TRIMMED BACK FROM THE TOP EDGE OF THE TRENCH.
- SEE SPECIFICATION SECTION 02510 FOR FURTHER INFORMATION.
- ALL EXISTING ROAD LINES SHALL BE RE-MARKED AS NECESSARY. SHOULDER SHALL BE REPLACED IF NECESSARY TO AS IT EXISTED PRIOR TO
- 7. IF ROADWAY FABRIC IS PRESENT CUT BACK SUBBASE TO PROVIDE PROPER MANUFACTURERS RECOMMENDED LAP JOINT, FABRIC TO BE MIRIFI 500X OR EQUAL
- 1. IF ROADWAY FABRIC IS PRESENT CUT BACK SUBBASE TO PROVIDE PROPER
- MANUFACTURES RECOMMENDED LAP JOINT. FABRIC TO BE MIRIFI 500X OR EQUAL 2. KEEP TRENCH SURFACE AS NARROW AS PRACTICAL.



EXTENSION STYLE

PROPERTY LINE OR

EXTENSION TYPE

CURB BOX

PERMANENT EASEMENT

OR 1' (OR AS SHOWN ON

4"x 8"x 16" CONCRETE CAP

BLOCK ON UNDISTURBED EARTH

CONTRACT DRAWINGS)

PLUG FOR FUTURE

CONNECTION

UNDISTURBED SOIL

CONCRETE BEARING FACE

AGAINST UNDISTURBED EARTH

CURB BOX

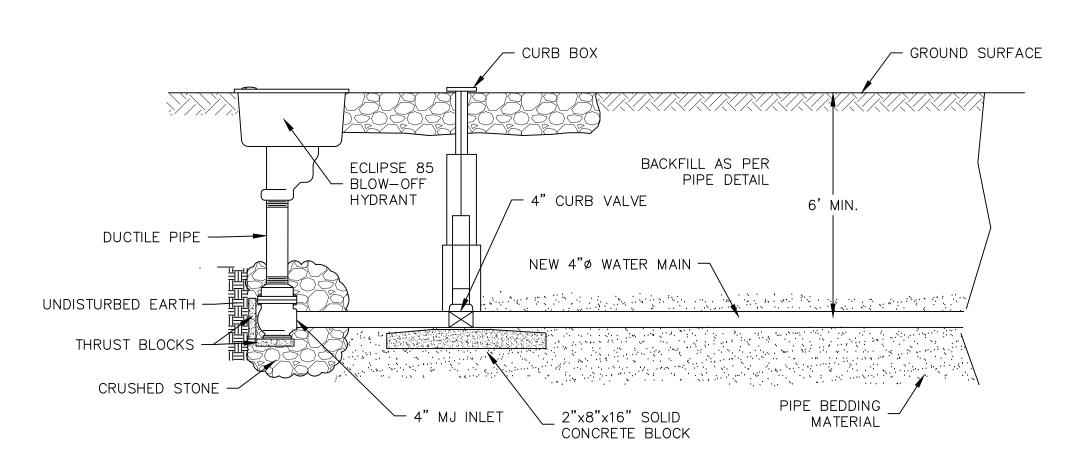
NOTES:

- 1. WHEN USING PVC WATER MAIN, PROVIDE DOUBLE STRAP SERVICE CONNECTION SADDLES FOR SERVICE CONNECTIONS. SEE SPECIFICATIONS.
- 2. TEFLON THREAD SEALANT TAPE WILL BE USED ON ALL CORPORATION STOPS PRIOR TO INSERTION
 - A. SPIRAL WRAP COMPLETELY COMPLETELY COVERING THE THREAD AREA WITH TWO WRAPS
- B. PIPE DOPE OR OTHER LIQUID THREAD SEALANTS ARE NOT ACCEPTABLE
- 4. MINIMUM DISTANCE BETWEEN CORPORATIONS ALONG PIPE IS 12"

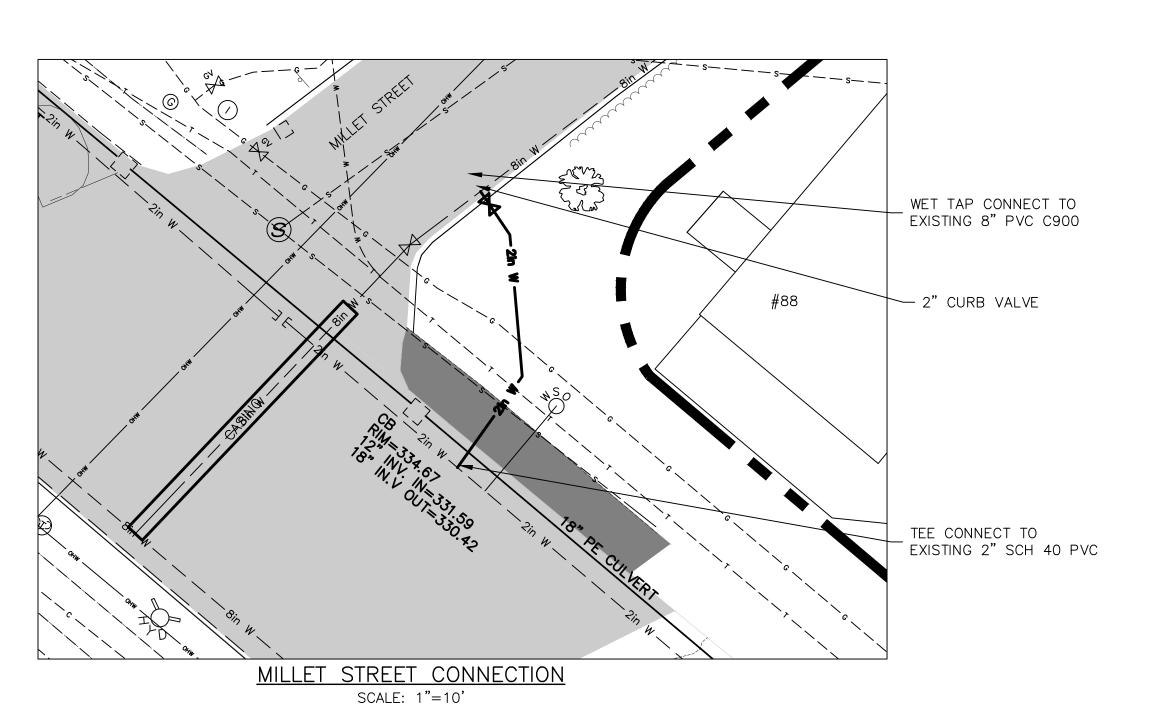
3. LEAVE ONE TO THREE THREADS SHOWING OUTSIDE OF PIPE

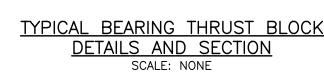
THE FOLLOWING EMBEDMENT MATERIALS MAY BE USED FOR HDPE OR COPPER SERVICES

SAND; 90-100 PERCENT PASSING THROUGH A HALF-INCH (1/2") SIEVE AND NOT MORE THAN 15 PERCENT PASSING THROUGH A No. 200 SIEVE.



4"ø ECLIPSE NO. 85 BLOW OFF DETAIL SCALE: NONE





UNDISTURBED SOIL-

HORIZONTAL BEND

TYPICAL-

SECTION A-A

- UNDISTURBED SOIL

H (TYP. FOR ALL BLOCKS)

ALL THRUST BLOCKS SHALL BE CLASS "B" CONCRETE, SEE SPEC. SECTION 03300 CONCRETE SHALL BE PLACED SO AS NOT TO HAMPER THE FUTURE REMOVAL OF A FITTING. WRAP FITTINGS IN (2) LAYERS POLYETHYLENE PLASTIC SHEET PRIOR TO FORMING AND

MINIMUM BEARING FACE "HEIGHTS AND WIDTHS" FOR CONCRETE THRUST BLOCKS (TEST PRESSURE = 250 PSI) HEIGHT (H) AND WIDTH (B) OF BEARING FACE FOR

BEARING FACE	PIPELINE	11-1/4	BEND	22-1/2	° BEND	45°	BEND	90°	BEND	TEES &	: PLUGS	W	res
BEARING FACE MATERIALS 2	SIZE	H '/-	B	H H	B	H	В	H	В	H	B	н "	В
WELL GRADED SANDS AND GRAVEL	4"ø & 6"ø	1.30	1.30	1.30	1.80	1.30	2.50	1.70	3.40	2.00	4.00	1.30	2.50
AND GRAVEL	8 " ø	1.30	1.60	1.30	2.30	1.70	3.30	2.20	4.40	2.70	5.30	1.70	3.30
	10 " ø	1.30	2.00	1.50	2.90	2.00	4.00	2.80	5.50	3.30	6.50	2.00	4.00
	12 " ø	1.30	2.40	1.70	3.40	2.40	4.80	3.30	6.60	3.90	7.80	2.40	4.80
	16 " ø	1.70	3.30	2.30	4.60	3.20	6.40	4.40	8.70	5.20	10.40	3.20	6.40
	24 " ø	2.50	4.90	3.50	6.90	4.90	9.70	6.60	13.10	7.80	15.60	4.90	9.70
SILT	4"ø & 6"ø	1.30	2.10	1.50	2.90	2.10	4.10	2.80	5.50	3.30	6.50	2.10	4.10
	8 " ø	1.40	2.70	1.90	3.80	2.70	5.30	3.60	7.20	4.30	8.60	2.70	5.30
	10 " ø	1.70	3.30	2.40	4.70	3.30	6.60	4.50	8.90	5.30	10.60	3.30	6.60
	12 " ø	2.00	4.00	2.80	5.60	4.00	7.90	5.40	10.70	6.40	12.80	4.00	7.90
	16 " ø	2.70	5.30	3.80	7.50	5.30	10.50	7.20	14.30	8.50	17.00	5.30	10.50
	24 " ø	4.00	8.00	5.70	11.30	7.90	15.80	10.70	21.40	12.80	25.50	7.90	15.80
COHESIVE GRANULAR	4"ø & 6"ø	1.30	1.40	1.30	2.00	1.50	2.90	2.00	3.90	2.30	4.60	1.50	2.90
	8"ø	1.30	1.90	1.40	2.70	1.90	3.80	2.60	5.10	3.10	6.10	1.90	3.80
	10 " ø	1.30	2.40	1.70	3.30	2.40	4.70	3.20	6.30	3.80	7.50	2.40	4.70
	12 " ø	1.40	2.80	2.00	4.00	2.80	5.60	3.80	7.60	4.50	9.00	2.80	5.60
	16 " ø	1.90	3.80	2.70	5.30	3.70	7.40	5.10	10.10	6.00	12.00	3.70	7.40
	24 " ø	2.80	5.60	4.00	8.00	5.60	11.20	7.60	15.20	9.00	18.00	5.60	11.20
CLAY	4"ø & 6"ø	1.30	1.30	1.30	1.40	1.30	2.00	1.40	2.80	1.70	3.30	1.30	2.00
	8"ø	1.30	1.30	1.30	1.90	1.40	2.70	1.80	3.60	2.20	4.30	1.40	2.70
	10 " ø	1.30	1.70	1.30	2.40	1.70	3.30	2.30	4.50	2.70	5.30	1.70	3.30
	12 " ø	1.30	2.00	1.40	2.80	2.00	3.90	2.70	5.40	3.20	6.40	2.00	3.90
	16 " ø	1.40	2.70	1.90	3.80	2.70	5.30	3.60	7.10	4.30	8.50	2.70	5.30
	24"ø	2.00	4.00	2.80	5.60	4.00	7.90	5.40	10.70	6.40	12.80	4.00	7.90

HYDROSTATIC AND LEAKAGE TEST PRESSURE PER SPECIFICATIONS.
 UNDISTURBED EARTH: SIDE OF TRENCH OR OTHER EXCAVATION.
 SEE DIAGRAM FOR H AND B LOCATION REFERENCE. MEASURED IN FEET.

(2) #4 REBAR

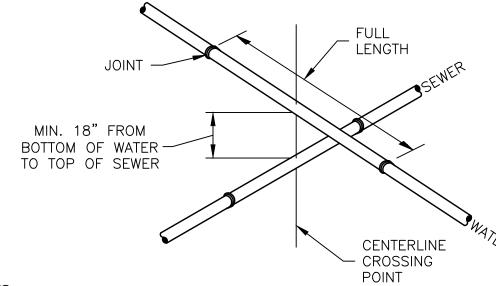
HORIZONTAL TEE

POURING THRUST BLÓCK.

AROUND FITTING

RECOMPACTED SOIL TO RESIST HORIZONTAL FORCE

SUCH AS "GRIPPER RINGS" OR RETAINER GLANDS, FOR REVIEW BY ENGINEER IN LIEU OF THE THRUST BLOCK DETAILS SHOWN ABOVE.



NOTES:

- 1. NEW WATER MAINS SHALL BE LAID AT LEAST 10' FROM EXISTING SEWER LINES WHEN RUNNING PARALLEL AND AT SAME ELEVATION.
- 2. WHERE A NEW WATER MAIN CROSSES OVER AN EXISTING SEWER LIINE THERE WILL BE A MINIMUM VERTICAL SEPARATION DISTANCE OF 18" BETWEEN THE OUTSIDE OF THE WATER AND THE OUTSIDE OF THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO AS BOTH JOINTS ARE AS FAR FROM THE SEWER AS POSSIBLE.
- 3. WHERE A NEW WATER MAIN CROSSES UNDER AN EXISTING SEWER LINE THERE WILL BE A MINIMUM VERTICAL SEPARATION DISTANCE OF 18" BETWEEN THE OUTSIDE OF THE WATER AND THE OUTSIDE OF THE SEWER
- 4. IF THE SEWER MAIN IS LOCATED ABOVE THE WATER MAIN THE FIRST SEWER PIPE JOINTS ON EACH SIDE OF THE WATER MAIN MUST BE CONCRETE ENCASED

WATER / SEWER SEPARATION DETAIL SCALE: NONE

DETAILS ONNECTION 02/17/16 BPC

JAN. 2016 PROJECT NO. 26-001 DRAWING NO.

SHEET 2 OF 3

SECTION 01403 - TESTS AND RESULTS EXPECTED (WATER) DESCRIPTION: 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. Required Tests By Contractor For water mains installed under this Contract, the Contractor shall perform a hydrostatic and leakage test on each pipe line. (See this Section). Two (min.) bacteriological-disinfection tests shall also be taken for each pipe run. (See Sections - 01651, 02675) Materials Testing (a) In-Place Soil Compaction Test and necessary supporting lab work. Gradation Tests Includes test for mortar sand, bedding materials, and subsurface material. Concrete Tests Includes compression tests as well as on site slump, temperature, and airentrainment tests. Bituminous Concrete Tests Includes sampling and testing at batch plant as well as at the paying site Conduct tests to verify mix gradation, fractured faces, soundness, percent asphalt, temperature, and all tests necessary to verify Vermont Department of Highway standards. 1.02 WATER AND APPARATUS FOR TESTING: The Contractor shall provide all water or coordinate the use of water and water lines for all pipeline and tankage testing. Contractor shall supply all test apparatus as required for his testing, retesting, etc. for this project. (a) Water shall be clear and suitable for nonpolluting discharge. Test apparatus shall be acceptable to the Engineer and meet AWWA, ASTM, and Vermont Highway Department Standards. SUBMITTALS: The Contractor shall submit signed reports with Engineers certification provided for each test performed showing examinations, leakage and/or other test data. Reports/Certificates Promptly process and distribute all required copies of test reports and related instructions to ensure all necessary re-testing and/or replacement of materials with the least possible delay in progress of the work **QUALITY ASSURANCE:** Qualifications of Testing Laboratory The testing laboratory will be qualified in accordance with ASTM E329 "Recommended Practice for Inspection and Testing Agencies for Concrete and Steel used in Construction". Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society of Testing and materials. The testing laboratory and/or services selected by the Contractor for testing shall be acceptable to the CODE COMPLIANCE TESTING: Inspections and tests required by codes or ordinances, or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise CONTRACTOR'S CONVENIENCE TESTING: Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the COOPERATION WITH TESTING PERSONNEL: All testing personnel shall have access to the work at all times. Facilities shall be provided in order that the labora tory may properly perform its functions. NONE THIS SECTION PART 3 - EXECUTION WATER MAIN TEST Tests to be made only after partial or complete backfilling of trenches. Position of all valves (fully opened or closed) in section of line to be tested shall be checked in the presence of the Engineer to insure that: (a) All hydrant branch connections are open to the hydrant (hydrant closed, branch connection valve open). All main line valves are properly positioned for section of line being tested. Tests not to be performed for at least seven (7) days after last concrete thrust block or anchor Coordinate all testing with Water Department personnel and perform testing only with their Fill pipelines, fittings, and appurtenances with water for testing slowly. Expel all air from pipelines, fittings, and appurtenances prior to performing tests. If permanent air vents are not located at all high points, the Contractor shall install corporation stops at his expense at such points so that the air can be expelled as the line is filled with water. Conformance Standard Perform hydrostatic and leakage tests conforming to all provisions of AWWA C600 (latest Performance Criteria Hydrostatic and leakage tests shall be conducted concurrently. The specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The specified test pressure 1.5 times working pressure as measured at the elevation of the lowest point of the pipeline or section under test, and corrected to the elevation of the test gauge, but not less than 1.25 times the normal working pressure at the highest elevation of the test section. Duration of test shall be at least 2 hours. Leakage to be measured in manner satisfactory to the Enginee Leakage is defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain the test pressure. Allowable leakage (a) For mechanical or push-on joints (1) No pipeline installation, or valved section thereof will be accepted if the leakage is greater than that determined by the following formula: L= allowable leakage, in gallons per hour S= the length of pipe being tested, in feet D= the normal diameter of the pipe, in inches P= average test pressure during the leakage test, in pounds The Contractor and the Engineer shall compute the allowable leakage for each section to be tested and agree on the allowable amount prior to performing any tests. (b) For flanged joints No leakage allowed. Evaluation of Results/Corrective Actions Examination under pressure (a) All exposed pipes, fittings, valves, hydrants, joints shall be examined carefully during the hydrostatic and leakage tests (1) Any damaged or defective pipe, fittings, valves, or hydrants that are

iscovered during or following the hydrostatic and leakage tests shall be repaired or

replaced with sound materials by the Contractor at his expense and the tests shall be

specified in previous paragraph herein, the Contractor shall, at his own expense, locate

If any leakage test of a section of the system discloses a leakage greater than that

and repair or replace the defective or damaged materials. He shall then repeat the

repeated until they are satisfactory to the Engineer.

Examination of Leakage

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

Exercise care in transporting and handling to avoid damage to pipe and fittings. Follow manufacturers' 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.

Submit certified copies of all test reports.

Water to be furnished by Contractor.

system upon completion of flushing.

to insure that they are in proper operating position.

All main line valves to be open.

defects, damages, leaks, or incomplete work.

These items are, but shall not be limited to:

Pipe, valves, hydrants, services, etc.

Adjust, repair, correct, or complete as necessary

Placing into Operation

Check Valve Positioning

Job Completion

SECTION 02611 - PIPE AND PIPE FITTINGS - GENERAL

3.04 ADJUSTING:

3.05 CERTIFICATION:

PART 1 - GENERAL

1.01 DESCRIPTION:

PART 1 - GENERAL

1.01 <u>DESCRIPTION:</u>

1.03 SUBMITTALS:

1.02 QUALITY ASSURANCE:

Work Included

B. Workmanship

C. Alignment and Grade

D. Assembly of Pipe, Fittings, and Appurtenances

Lug" or equal.

Water Supply Contamination

Protection of Open Piping

A. Requirements of Regulatory Agencies

C. AWWA C900 PVC Pressure Pipe for Water

other standards as appropriate.

B. Potable Water System Materials

1.02 CONTRACTOR'S RESPONSIBILITIES:

Dispose of wastewater by method acceptable to the Engineer.

Shutoffs on hydrant branch connections to be open.

Corporation stops and curb stops to be open.

(a) Retest, disinfect, and commission again as required

Slowly open proper valve or valves to completely energize and make system fully operational.

Check all valves in the section of the system just commissioned in the presence of the Engineer

Observe newly commissioned sections of system for proper operation, and to detect flaws,

At job completion and after all systems are placed into operation the Contractor, together with

The Contractor shall certify in writing that all parts of the system have been installed properly and are

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

Furnish all labor, materials, equipment, and incidentals required to install, lay, join, test, and

fittings and appurtenances herein and as shown on the Contract Drawings.

specifically shown on the Contract Drawings or specified herein.

As shown on the Contract Drawings or as directed by the Engineer in field.

All work to be accomplished in a neat, workmanlike manner.

In accordance with material manufacturer's recommendation

In accordance with these Specifications.

Final installations to be free from any strai

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.

Removal, Repair, or Replacement of Defective Work

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

disinfect all water supply, transmission, distribution, house service and all other pipelines and

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

All mechanical joint pipe and fittings shall utilize proper type and size retainer glands, "Mega-

Protect open pipe fittings or appurtenance ends whenever work is suspended during

construction to prevent any foreign materials or extraneous water from entering therein. Use

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.

Install piping to meet the requirements of State of Vermont, Water Supply Division.

1. Seal of Approval of National Sanitation Foundation testing Laboratory.

1. Pipe must meet all standards of the Current AWWA C-900 Standard.

compounds, paint solvent, paint thinner and acid solder.

Install pipe and fittings to meet the requirements of the so-called "10 State Standards".

Reject materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic

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

Submit manufacturer's certificates of conformance with the Current AWWA C-900 and

temporary plugs, burlap or other approved materials as applicable to each situation.

Contractor shall remove, repair, or replace any work not conforming to requirements of the

To include any and all appurtenances required for a complete installation not

Insure that water from disinfection of system and all extraneous matter is totally out of

D. Keep inside of pipes and fittings free of dirt and debris.

JOB CONDITION: A. Do not install pipe and fittings in inclement weather conditions, which prevent a clean

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 <u>PIPE:</u>

A. Polyvinyl Chloride (PVC) Pressure Pipe 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:

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 of Factor of Safety 2.5 is 200 psi (exterior buried use).

Ductile Iron (D.I.) (a) All joint types ANSI A21.53 (latest version)

Pressure rating = 350psi, all sizes

2.03 **GASKETS**:

A. Polyvinyl Chloride (PVC) 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 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".

The identifying lettering shall be repeated the full length of the tape. Tape width - minimum size is three (3) inches.

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 Defects that adversely affect execution and quality of work.

Deviations beyond allowable tolerances of piping clearances.

C. Pipe to be kept clean 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 <u>INSTALLATION:</u>

A. Pipe Installation 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

(d) At times when pipelaying is not in progress, the open ends of installed pipe shall be closed by a watertight plug. 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 trench water shall be permitted to enter the pipe.

Casings: PVC Pressure Water Pipe installed in casings, shall be mounted in skids. Pipe bells shall not rest on skids. Install skids according to AWWA M23 (a) 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

(a) Cut plastic pipe with a hand saw. Make cuts square with pipe.

Remove burrs by smoothing edges with a knife, file or sandpaper. Bevel edges as recommended by manufacturer.

(a) PVC Pipe: Push-on gasketed (exterior buried use).

Push-on gasketed joints: As recommended by manufacturer of pipe or Junction with Other Materials: Use type of adapter and technique recommended by pipe manufacturer.

All mechanical joint fittings shall utilize proper type and size retainer glands "Mega-Lug" or equal.

Testing (Exterior):

Refer to additional sections of these Specifications for pressure and leakage testing as well as disinfection.

SECTION 02663 - INTERCONNECTIONS WITH EXISTING WATER MAINS PART 1 - GENERAL

1.01 <u>DESCRIPTION:</u>

1.02 QUALITY ASSURANCE:

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.

1. This Specification is to cover any temporary interconnections as well as permanent interconnections.

Clean, neat installations disinfected in accordance with AWWA C651 (latest revision). 1.03 JOB CONDITIONS: Contractor shall dig 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. All interconnections must be scheduled a minimum of 48 hours before actual work is to be done

Contractor must notify all residents to be affected by the work at least 24 hours prior to the work being

Contractor must perform work only on days and at times approved by the Engineer and the Owner.

PART 2 - PRODUCTS All as necessary to make interconnections.

PART 3 - EXECUTION 3.01 INSPECTION: The Contractor shall inspect all interconnection areas prior to actual interconnection work

3.02 PREPARATION: Materials and Equipment on Hand 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. The Contractor shall "treat" the trench in accordance with AWWA C651 (latest revision)

The Contractor shall disinfect all materials to be installed in accordance with AWWA C651 (latest revision) Continuous feed or slug method shall be used. The tablet method is <u>not</u> acceptable. Make interconnection, restrain fittings and appurtenances, pour thrust blocks and flush so as to have

service interrupted for as short a period of time as possible Place into operation.

Backfill only after approval of the Engineer. After placing into operation but prior to backfilling, inspect each interconnection for soundness,

workmanship, leaks, etc. Correct any flaws, defects, leaks, etc. SECTION 02675 - DISINFECTION OF DOMESTIC WATER LINES & FACILITIES

1.01 <u>DESCRIPTION:</u> Work Included

Furnish all labor, materials, equipment, and incidentals required, and disinfect (chlorinate) all domestic water piping systems and facilities as specified herein after pressure testing but prior to placing the systems into operation. (1) Disinfection

Residual testing Complete flushing 1.02 QUALITY ASSURANCE:

> 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". 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:

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 acilities are to be accepted and put into service.

PART 2 - PRODUCTS 2.01 None this section: PART 3 - EXECUTION

3.01 PREPARATION: Contractor shall construct any required corporation stops, goosenecks or any and all other ppurtenances necessary, at his/her own expense; to carry out the disinfection work as specified.

Flush all pipeline systems prior to disinfecting. 3.02 PERFORMANCE: Disinfect all new pipeline systems and facilities in accordance with AWWA C651 (latest revision) and

AWWA C652 (latest revision), including: Form of chlorine utilized Method of chlorine application

Final flushing Bacteriological testing Repetition of procedure

Disinfect with the continuous feed method or slug method in accordance with AWWA C651 (latest revision). The tablet method is not an acceptable method. 3.03 <u>DISCHARGE OF CHLORINATED WATER:</u>

The Contractor shall not discharge heavily chlorinated water (> 2ppm) without first neutralizing the chlorinated water. **B.** The Contractor shall use the H₂0 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 wate SECTION 07240 - RIGID INSULATION (Buried Pipe)

1.01 DESCRIPTION: 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. QUALITY ASSURANCE:

Acceptable Manufacturers U.C. Industries, or equal. PRODUCT DELIVERY, STORAGE, AND HANDLING Deliver, store, and handle insulation to prevent damage thereto Reject any damaged or cracked materials.

JOB CONDITIONS: Buried Insulation to be Installed Where shown on the Contract Drawings. As required by field conditions.

2.01 BOARD INSULATION: Conform to Federal Specifications HH-I-524C, Type IV. Rigid thermal insulation: Foamular 250 (Tongue & Groove), or equal.

24 or 48 inches wide by 96 inches long. Minimum compressive strength 25 psi Maximum water vapor transmission rate of 1.1 perms per inch. PART 3 - EXECUTION

3.01 PREPARATION

Backfill pipeline trenches and compact where board insulation is required to 9 inches over the top of the pipe. Backfill and compact as required by other Sections of these Smooth top of backfill materials to receive board insulation 3.02 INSTALLATION:

Lay two (2) layers of continuous board insulation full width of trench (total in-place thickness as shown Stagger joints so that no joints of the two (2) layers are one over the other.

Cut and fit as required. A. Continue backfilling operations as specified elsewhere so as to prevent damage to installed insulation SECTION 15101 - GATE VALVES

PART 1 - GENERAL 1.01 <u>DESCRIPTION:</u> Work Included

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: Acceptable Manufacturers

Resilient Seat Gate Valves: Waterous, Kenedy, U.S. Pipe, or equal. 1.03 SUBMITTALS:

Shop Drawings of Valve and Operators Dimensions and weights Construction details.

Manufacturer's literature and illustrations. Submit manufacturer's certifications that valves and accessories meet or exceed Specification reauirements.

Installation, Operating and Maintenance Instruction Complete manufacturer's installation instructions Operating and Maintenance instructions.

Parts lists 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING: Prepare valves and accessories for shipments according to AWWA C509, or C515, (latest revision), and

> Seal valve ends to prevent entry of foreign matter into valve body. Box, crate, completely enclose, and protect valves and accessories from accumulations of foreign matter. Store valves and accessories in area protected from weather, moisture, and possible damage.

Do not store materials directly on ground. Handle items to prevent damage to interior or exterior surfaces. PART 2 - PRODUCTS

2.01 IRON-BODY GATE VALVES (all applications): AWWA C-509 or C-515 (latest revision)

Stem Construction Non-rising, unless otherwise noted on Contract Drawings.

Double O-ring. Gate C.I. resilient wedge with synthetic elastomer coating. C.I. shall be epoxy coated (fusion bonded) inside and out.

Stainless Stee End Connection As required for application and/or as shown on the Contract Drawings

Direction of rotation to open (a) Counter-clockwise with operator marked to show direction to open.

Type of Operator (a) As indicated on Contract Drawings. Interior and exterior

(a) Epoxy (fusion bonded) Gate Box Aligner (Disk) Keeps valve box aligned during backfilling.

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. Assures that surface debris that enters the valve box quickly and easily flushes out using air or High-strength plastic construction

All mechanical joint gate valves shall be installed utilizing restrained joint glands, "Mega-Lugs" or

8-inch Diameter x 1 1/2-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 <u>INSTALLATION:</u>

Install valves and accessories in accordance with manufacturer's instructions. Anchorage Provide thrust restraint as shown on the Contract Drawings.

3.02 ADJUSTMENTS: 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

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.

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

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

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.

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:

3. ALL PROTECTIVE AND CORRECTIVE WORK SHALL BE PERFORMED AT THE EXPENSE OF THE CONTRACTOR.

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, LAWNS, 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, VOSHA 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 MINIMIZING IMPACTS TO WETLANDS, 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.

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

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

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.

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PROJECT NO. 26-001 DRAWING NO.

SHEET 3 OF 3

TOWN OF RICHMOND

LIQUID NET ASSETS 6/30/2019

WATER FUND

	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

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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)
		\$ 150,256.28

	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:

Final Design I	tems	Original Contract	Amendment No. 1
A.	Basic Services	\$ 5,200.00	\$4,000 (Lump Sum)
В.	Ancillary Services:		
	1. Permitting Assistance	525.00	\$ 400 (N-T-E)
	Subtotal	\$ 5,725.00	\$4,400
Bid and	d Construction Phase Items	Cost	
C.	Bid Phase Services	\$ 1,000.00	No Change (Lump Sum)
D.	Basic Services	1,500.00	No Change (Lump Sum)
E.	Resident Services	<i>7,7</i> 30.00	No Change(N-T-È)
F.	Special Services:		
	1. Record Drawings	1,000.00	No Change (N-T-E)
	Subtotal	\$ 11,230.00	
	TOTAL	<u>\$ 16,955.00</u>	<u>\$4,400</u>
	TOTAL with	Amendment No. 1	<u>\$ 21,355.00</u>

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

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Josh Arneson, Town Manager	Date of Execution