Before construction of any utilities or improvements, the Contractor shall notify the Public Works Department in writing of any intentions to proceed. In writing, of Public Works (PW), IN WRITING, of intent to proceed.

1. All water mains, fittings, appurtenances and other materials and components shall conform to all applicable AWWA, Standard Codes, codes, standards and regulations. In the event of conflict between these construction details and specifications and a code or regulation, the Vermont Department of Health or VIBER Water Supply shall be binding.

2. All water mains, fittings, appurtenances shall be installed in a workmanlike manner. Installation shall be under the general supervision of the Public Works Department. Before any water line work is commenced by the Contractor, they shall notify the Public Works Department at least five (5) working days in advance of his intention to proceed.

3. Connection to an existing water main shall be done under the supervision of, and with the approval of the Public Works Department. It is the Contractor's responsibility to secure ALL necessary permits and permission from the appropriate authorities prior to coordinating with others and proceeding with the installation. The Public Works Department shall notify at least five (5) working days in advance of the intended connection time.

4. An inspector employed by the Public Works Department shall be notified at least two (2) working days in advance of all water line installations. Said inspector shall be allowed on the job site for all water line installations.

5. As-Builts prepared by the Contractor are required by the Public Works Department at the completion of the construction work. The Contractor shall provide accurate tie sheets for all new valves, fittings and curb stops. The contractor shall allow the city to access the construction site to obtain additional information and to make changes in the project.

6. All water mains shall have horizontal and vertical distances as detailed on this drawing.

7. All public and private water mains 1.4" or greater shall be C-90B pipe (note 21 below). 2" less than 4" in diameter shall be ULTRA-HIGH DENSITY POLYETHYLENE TUBING DESIGNED FOR A WORKING PRESSURE OF 200 PSI (AWWA C-90, ASTM D-128 AND ASTM D-2554). All water line fittings shall be ductile iron, AWWA C-110, cement-lined. For water lines less than 4 inches in diameter, fittings greater than valves shall meet MANUFACTURER'S RECOMMENDATIONS AND VIBER WATER SUPPLY REQUIREMENTS FOR LEAD CONTENT.

8. All buried valves shall conform to AWWA C-504 or C-599, and shall be resilient wedge gate valve, size 2" or larger. Resilient wedge butterfly valves for larger sized valves. All gate valves shall open right clockwise and shall have adjustable iron valve boxes extending to the finished grade (see Typical Details).

9. Hydrants shall be in accordance with AWWA C-302, 3-way post type breakaway Kennedy KB-1A, with two (2) 2"-1/2" hose nozzles and one (1) 4"-1/2" single nozzle. Nozzles shall be equipped with 2 1/2" female NPT threads shall be 4" OD. Hydrant body shall include a 6.5" bung (copper). In all cases, it is the Contractor's responsibility to secure the approval of the Public Works Department for the approval of the selected hydrant(s) and assure compatibility. All hydrant drains shall be permanently plugged or a non-draining hydrant shall be installed. All hydrants shall be set back a minimum of three (3) feet from paved surfaces. In addition, whenever a traffic hazard appears to exist (in the opinion of the Public Works Department), the hydrant shall be protected by curbing and/or post-stanchions.

10. Curb boxes shall be Buffalo Type with telescoping top and bolt-on caps.

11. All water mains, fittings, appurtenances shall be pressure tested and back-filled before being placed into service, according to AWWA Standard C-600. The test pressure shall be 290 psi (200% of the size) measured at no more than 5 feet below grade at the point of the system being tested, and the test shall be run for two (2) hours. The Public Works Department shall be notified at least twenty-four (24) hours prior to the test. The test shall be conducted, and 24 hours personnel shall witness the test. Allowable leakage shall be computed by the following formula, L = 3 x sq. root(P/383), where L = Leakage in gallons per hour, P = Pressure in pounds per square inch, and 383 = Sutphen's factor. The person(s) conducting the test(s) shall be responsible for determining the results to the Public Works Department and Vermont Department of Health that this discharge procedure was followed and the required minimum results were obtained. The Contractor shall be responsible for all salvage and clean-up costs.

12. All water lines, before being put into service, shall be disinfected in accordance with the latest edition of AWWA C-650, or as directed by the Public Works Department or contractor shall install 1" diameter tap in each water service line immediately before the water enters the house for chlorine injection. Tap shall be located as approved by the Public Works Department. The person(s) responsible for disinfection shall certify to the Public Works Department and Vermont Department of Health that this disinfection procedure was followed and the required minimum results were obtained. The Contractor shall be responsible for all salvage and clean-up costs. TAP USED FOR CHLORINATION SHALL BE CLOSED AND PLUGGED PRIOR TO WASHDOWN. The Contractor shall perform all construction activities in accordance with the latest edition of AWWA C-650. THE CONTRACTOR SHALL RECEIVE THE LATEST EDITION OF BURLINGTON'S WATER SUPPLY FLOW CHART TO ENSURE COMPLIANCE WITH AWWA C-650. THE CITY REQUIRES BAC-T SAMPLES TO BE COLLECTED AND TESTED ANY TIME THE EXISTING WATER SYSTEM IS CUT INTO.


14. No valves, hydrants, curb stops, etc. shall be operated without prior approval by the Public Works Department.

15. All taps larger than 1" shall require the use of bronze saddles. SADDLES ARE REQUIRED FOR ALL TAPS ON PVC PIPE.

16. All brass unions and adapters shall be lead-lab by Cambridge.

17. All corporations and stop valves shall be Cambridge with nitrile gaskets.

18. Water main valve larger shall be AWWA C900 PVC, and fittings shall be plastic valve class of 305 psi (CD1A). Main 2" or less shall conform to AWWA C900 and be HDPE CTS pipe with a pressure class of 200 psi (359). All plastic pipe (INCLUDING SEWER) shall have a minimum 15 AVG high strength concrete coat in sign strength concrete class of 4000 psi, and be blue insulated directly to the top of pipe with vinyl tie wraps or electrical ties. This truss pipe shall be a continuous truss, splices between valves with ends for attaching a locating signal at each valve box, end of pipe run or every 500' of pipe, whichever is less. If no valve boxes are located within 500 feet of each other, a magnetized tracer shall be placed at each box. Waterproof splices shall be allowed in valve boxes per the detail on this sheet. Waterproof splices, truss box and wire nuts shall be detectable by Copperhead Industries or approved in addition. In addition, detectable metallic underground tape labeled "Caution Buried Water Line Below" shall be non-metallic. The entire service line shall be approved in addition. A minimum of 2" below finished grade.

19. Nitrile Butyl Elastomeric Rubber (NBR) gaskets shall be used in lieu of the standard elastomeric rubber (SBR) gaskets for PVC pipe and fittings.

WATER SYSTEM DETAILS

WATER SYSTEM CAPITAL IMPROVEMENTS 2019 WATER MAIN REHABILITATION
CITY OF BURLINGTON, VT

DRAWING NO. D-1

SCALE 1/0" ON 1'-0"

12/11/18
TYPICAL TRENCH DETAIL

N.T.S.

<table>
<thead>
<tr>
<th>Y - DIMENSION</th>
<th>CONDITION &amp; PIPE</th>
<th>** SELECT MATERIAL</th>
<th>LINING</th>
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<tr>
<td>6'</td>
<td>DUCTILE IRON PIPE IN &quot;ORDINARY SOIL&quot;</td>
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<td>ALL PIPE OVER BEDROCK OR LEDGE</td>
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<td>SAND OR TYPE III</td>
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<td>4'</td>
<td>DUCTILE IRON PIPE IN CLAY OR MUCK</td>
<td>TYPE II OR III</td>
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<td>6'</td>
<td>PLASTIC - ALL</td>
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* SUITABLE MATERIAL SHALL CONTAIN NO STONES GREATER THAN 4" IN DIAMETER, NO FROZEN LUMPS, AND ONLY MINOR AMOUNTS OF CLAY OR ORGANIC MATERIAL. ALL MATERIAL TO BE PLACED IN MAXIMUM OF 12" LIFTS AND COMPACTED BEFORE PLACING NEXT LIFT.

** TYPE I MATERIAL SHALL BE EITHER GRAVEL OR EXCAVATED MATERIAL CONTAINING NO STONES GREATER THAN 1 1/2" IN DIAMETER, NO FROZEN MATERIAL, NO CLAY, AND NO ORGANIC MATERIAL.

** TYPE II MATERIAL SHALL BE CLEAN, HARD, CRUSHED OR NATURAL STONE WITH A GRADATION BY WEIGHT OF 100% PASSING A 1 1/2" SQUARE OPENING, NOT MORE THAN 25% PASSING A 3/4" SQUARE OPENING, AND NOT MORE THAN 5% PASSING A 1/2" SQUARE OPENING.

** TYPE III MATERIAL SHALL BE CLEAN, HARD, CRUSHED STONE FREE FROM COATINGS AND THOROUGHLY WASHED WITH A GRADATION BY WEIGHT OF 100% PASSING A 1" SQUARE OPENING AND 0 TO 5% PASSING A 1/4" SQUARE OPENING.

NOTES
1. WHERE BACKFILL IS DESIGNATED "COMPACTED", THIS MEANS 90% TO 95% STANDARD PROCTOR, AASHO T-99. ALL FILL PLACED BELOW PIPES AND STRUCTURES TO MEET THIS REQUIREMENT.
2. FOR ALL TRENCHES WITH A GRADE GREATER THAN 4% AND/OR WHERE GROUNDWATER IS APPARENT, INSTALL CLAY BAMS AROUND PIPE AT 100' INTERVALS.
3. INSTALL TRACER WIRE AND DETECTABLE TAPE PER NOTE 21 ON THIS SHEET.
CONSTRUCTION RESTRICTIONS

1. IN ALL NEW CONSTRUCTION, DIMENSION 'A' SHALL NEVER BE LESS THAN 18 INCHES.

2. WITH ALL NEW CONSTRUCTION, THE CROSSING SHALL BE ARRANGED AS SHOWN IN THIS DIAGRAM, SO THAT THE SEWER JOINTS WILL BE LIQUIDANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

3. IF THE WATER MAIN MUST PASS BENEATH THE SEWER IN NEW CONSTRUCTION, OR IT IS IMPOSSIBLE TO MAINTAIN THE 18-INCH SEPARATION DUE TO EXISTING UTILITY (PREVIOUS CONSTRUCTION), THEN ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER, PLUS THE WATER MAIN OR THE SEWER SHALL BE COMPLETELY ENCASED IN A SEAMLESS SLEEVE CONSISTING OF A FULL MINIMUM 18 FEET LENGTH OF PIPE (E.G. SCH 40 PVC), CENTERED ON THE CROSSED UTILITY.

WATER / SEWER CROSSING DETAILS

N.T.S.
THRUSt BLOCK DETAILS

MINIMUM AREA OF BEARING SURFACE OF CONC. THRUSt BLOCKS

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SOIL CONDITION

- Silt sandy loam: 10,000
- Gravelly sandy loam: 4,000
- Gravelly silty loam: 3,000
- Clayey silt: 2,000
- Soft clay: 1,000

Max. water pressure = 300 psi

Note: Reducer bearing area = 45 deg. bend, larger pipe.
BURIED GATE VALVE DETAIL

N.T.S.
1. All hydrant drains must be plugged. See specification no. 6.

2. Where valve cannot be restrained to main tee, anchor valve as in buried gate valve detail.

3. Use Mego lug retainer glands for all connections.

Typical Hydrant Installation

N.T.S.
CURB STOP WITH BOX - TAPPED OR TEE CONNECTION

NOTES:
1. TAP MAY BE MADE DIRECTLY TO DUCTILE IRON PIPE. WITH OTHER PIPE MATERIALS USE EITHER A COUPLING CONTAINING A FACTORY - TAPPED BRASS BUSHING OR USE A DOUBLE STRAP SERVICE CLAMP. USE TEFLOM TAPE ON THREADS.
2. IF PLASTIC (CTS) PIPE IS USED FOR HOUSE SERVICE, TRACER WIRE IS TO BE INSTALLED FROM THE MAIN, AROUND THE CURB STOP INTO THE HOUSE WITH A COIL OF ADDITIONAL TRACER WIRE INSIDE THE HOUSE.
3. WALL SLEEVE SHALL BE TWO (2) TIMES THE DIAMETER OF THE HOUSE SERVICE BEING INSTALLED.
4. IN THE EVENT THAT A HOUSE SERVICE IS NOT BEING INSTALLED FROM THE CURB STOP, THE CONNECTION SHALL BE SEALED FOR FUTURE INSTALLATION.
TRENCH WALL BEYOND

FINISHED GRADE

ADJUSTABLE IRON VALVE BOX WITH LD MARKED "WATER", BUFFALO TYPE

AWWA BUTTERFLY VALVE

UNDISTURBED SOIL

SECTION

ELEVATION

BURIED BUTTERFLY VALVE DETAIL

N.T.S.
1. Connections shall be compression fittings for plastic CTS with stainless steel insert stiffeners required.

2. Every new curb box requires the extension of the tracer wire from the water main per Note 21 on this sheet. Tracer wire shall follow the service connection pipe from the water main to the curb box. The tracer wire shall be wound around the curb box a minimum of 6 times below ground. At approximately 1 foot below ground surface a ½' hole shall be platted in the new curb box and the tracer wire shall be extended into the curb box with approximately 1' of excess wire.

1" to 2" CURB BOX
N.T.S.