



City of Middletown
WATER & SEWER DEPARTMENT
82 Berlin Street
Middletown, CT 06457
TEL: (860) 638-3500
FAX: (860) 343-8091

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
JANUARY 2017

- WATER MAINS:** Cement lined ductile iron pipe, push on “Tyton” type joints and mechanical joints. Size varies, Class 52 (typical) per ANSI/AWWA C151/A21.51. Class 54 TR Flex type joints on Bridges and/or railroad crossings. Contact Water Department for exact information.
- WATER SERVICES:** A separate service is required for each building or structure on a lot.
- Underground:**
Type “K” copper tubing with compression joints. Sizing 1, 1½ and 2 inch. Provide Smith Blair Model #317 double strap, stainless steel service saddle for services 1-½ or 2 inch in size.
- In House:**
Type “K” copper tubing with flared joint connections to main shutoff valve. Shut off valve shall have a full port opening.
- FIRE SERVICES:** Same as water mains, minimum tap size by the Middletown Water Department is 6 inches.
- VALVES:** 6" to 12" resilient seal gate valves; (Clockwise, Open Right).
Mueller, Clow or Kennedy or approved equal.
16 inch and above butterfly valves; Mueller or Pratt.
Provide Valve Box Adaptor II by Adaptor, Inc. for all valve and gate boxes.

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
CONTINUED

- VALVES (CONT.):** Gate valve nut shall be 2 to 3-½ feet below finish grade. Provide Geneco 5VR-D gate valve nut extension as needed.
- HYDRANTS:** Mueller Super Centurion 4-½ inch Barrel, 5-foot Bury Depth Typical. (Counter Clockwise, Open Left). Multiple extensions are not acceptable. Different bury depths or hydrant lateral offsets may be required to avoid multiple extensions or As Ordered by Engineer (A.O.B.E.). Grade adjustment are available in 6-Inch increments. Place a minimum of six cubic feet of ¾ inch crushed stone for hydrant bleed off below weep holes. Hydrants shall be factory painted John Deere Green on the bonnet and caps and John Deere Yellow for the remainder.
- MINIMUM COVER:** The minimum cover for mains and services is 4-½ feet to top of pipe. Insulated piping or rigid insulation may be required at drainage structures or A.O.B.E.
- SEPARATION:** The minimum horizontal separation distance shall be 10 feet from sanitary sewers and/or 18 inches vertical. It is preferred to have the water main above the sanitary sewer wherever possible. Maintain a minimum of five feet horizontal separation for all other utilities.
- FITTINGS:** Cement lined ductile iron, mechanical joint, size and pressure rating compatible with adjoining pipe. No 90 degree bends allowed use two 45 degree bends instead.
- RESTRAINTS:** A joint restraint harness or EBAA Megalug shall be installed at all fittings. Joint restraints are to be installed on a minimum of two pipe joints either side of the fittings (50 feet minimum each side). Thrust blocks, solid concrete blocks with oak wedges, are to be installed at all bends, tees, hydrants or A.O.B.E., against undisturbed earth. Poured thrust blocks shall be installed A.O.B.E.
- HYDRANT BRANCHES:** Hydrant Branches shall be completely retained and blocked, or clamped and laced, A.O.B.E. Anchor tees are acceptable.
- DEAD ENDS:** Shall be retained and blocked, or clamped and laced, A.O.B.E. (3 lengths or 50 feet minimum). A blow off shall be installed at the end with a curb stop or gate valve.

**GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
CONTINUED**

VALVE LAYOUT: Three way valving shall be required at all intersection tees and four way valving shall be required at all intersection crosses or A.O.B.E. Single valving on all hydrant branches and fire services. Location of valve shall be determined by the Engineer in the field.

PAVEMENT: Pavement removal and/or replacement shall be in accordance with the latest City of Middletown DPW standards.

TAPPING SLEEVES: Shall be Mueller Mechanical Joint Tapping Sleeve H-615 on all taps that are the same size as the main. Outlet flange gaskets shall be 1/8" thick Nitrile (Buna-N) and NSF 61 approved.

All other tapping arrangements use Smith Blair 622 of 625 Tapping Sleeves or approved equal. Outlet flanges shall be mechanical joint.

The contractor shall follow the manufacturer's recommendations regarding installation, including a 120 psi air test to be witnessed by the Water Department prior to performing the tap.

NEW WATER MAIN: The procedure for bringing a newly installed water main into service shall follow these steps: fill main, check chlorine residual, flush, check chlorine residual, collect a bacteria sample (Wednesdays only), and pressure test once bacterial sample passes.

DISINFECTION: The contractor may secure in place chlorine tablets during installation to obtain a minimum chlorine concentration of 25 ppm for a duration of 48-hours. Alternately, the contractor may continuously inject a chlorine solution or use granulated powder to acquire a minimum concentration of 50 ppm.

Granulated powder may be placed in the piping during installation or liquid chlorine can be injected through a corporation cock after installation until a concentration of 50 ppm is maintained for a minimum of 24-hours. The highly chlorinated wastewater shall be discharged to the sanitary sewer if possible or dechlorinated prior to discharge. This procedure must meet or exceed the AWWA Standard C 651.

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
CONTINUED

- FLUSHING:** Discharge to sanitary sewer, if possible or to storm sewer utilizing best management practices including dechlorination, A.O.B.E. Contractor is responsible for all necessary appurtenances, flow monitoring and chemicals.
- BACTERIA TEST:** Per City Requirements. Samples can only be collected on Wednesdays.
- PRESSURE TEST:** A typical pressure test shall maintain a pressure of 200 psi for two hours. If the pressure drops below 200 psi than the resulting leakage must meet the minimum allowable per AWWA C 600.
- TRENCH BACKFILL:** Backfill to one foot above the water main shall be in accordance with the latest Water Department standards (see typical trench detail). The remainder of the trench backfill shall be in accordance with the latest City of Middletown DPW standards.
- JOINT DEFLECTION:** Unless otherwise approved, joint deflection for pipes sized 6 inches thru 12 inches inclusive shall be limited to 80% of the manufacturer's recommended maximum allowable deflection. Joint Deflection shall not exceed 4 degrees.
- GRID SPACING:** Grid spacing shall not exceed approximately 100 feet per inch of pipe diameter.
- i.e.: 8 inch pipe 800 feet
12 inch pipe 1,200 feet
- Grid spacing must be approved by the City of Middletown Water and Sewer Department.
- VALVE SPACING:** In addition to 3 or 4 way intersection valving, additional valve spacing shall generally not exceed grid spacing. Valve spacing must be approved by the City of Middletown Water and Sewer Department.

**GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
CONTINUED**

HYDRANT SPACING: Hydrant spacing shall generally not exceed the following:

Low Density 600 feet
High Density 300 feet

The City of Middletown Water Department and the Fire Marshall of the appropriate Fire District must approve hydrant spacing.

BACKFLOW PREVENTERS: Must be installed per the State of Connecticut Regulations. Submit plans/shop drawings for review and approval by Engineer.

BOOSTER PUMPS: Booster pumps shall be installed in the event that the second floor shower pressure is less than 40 psi.

PRESSURE REDUCERS: Pressure reducers shall be installed when the basement pressure exceeds 80 psi.

WATER METERS: All water meters shall be installed in an accessible location approximately two feet above the finished floor and no more than five feet from the shut off valve. The main shut off valve shall be within 8-inches of the service entrance. No taps or drain valves shall be located before the meter.

COUPLINGS/SLEEVES: Use a mechanical joint (M.J.) solid sleeve. If M.J. solid sleeve does not fit on non-standard cast iron pipe, then the contractor may request approval for a Smith Blair #442 cast coupling, minimum length shall be 12 inches.

MARKING TAPE: Provide detectable blue marking tape, six inches wide, located 12 inches above the water main or service.

ABANDONMENT: If water service is to be abandoned, the water service will be brought back to the corporation cock at the main. The gate valve, tee or tapping sleeve and gate valve shall be removed from the main and replace with ductile iron pipe and solid sleeves or A.O.B.E.

SUBMITTALS: Cut sheets for all materials to be used for construction must be submitted to the Water Department for review and approval two weeks prior to construction.

**GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
CONTINUED**

INFORMATION: All installations, building connections, valve operations, and test procedures must be cleared with the City of Middletown Water Department. Phone Number: 860-638-3500. Use the following extensions 860-638-XXXX:

Chief Engineer	3515
Assistant Chief Engineer	3517
Markouts/Inspections	3520
Backflow Prevention	3526
Distribution	3540

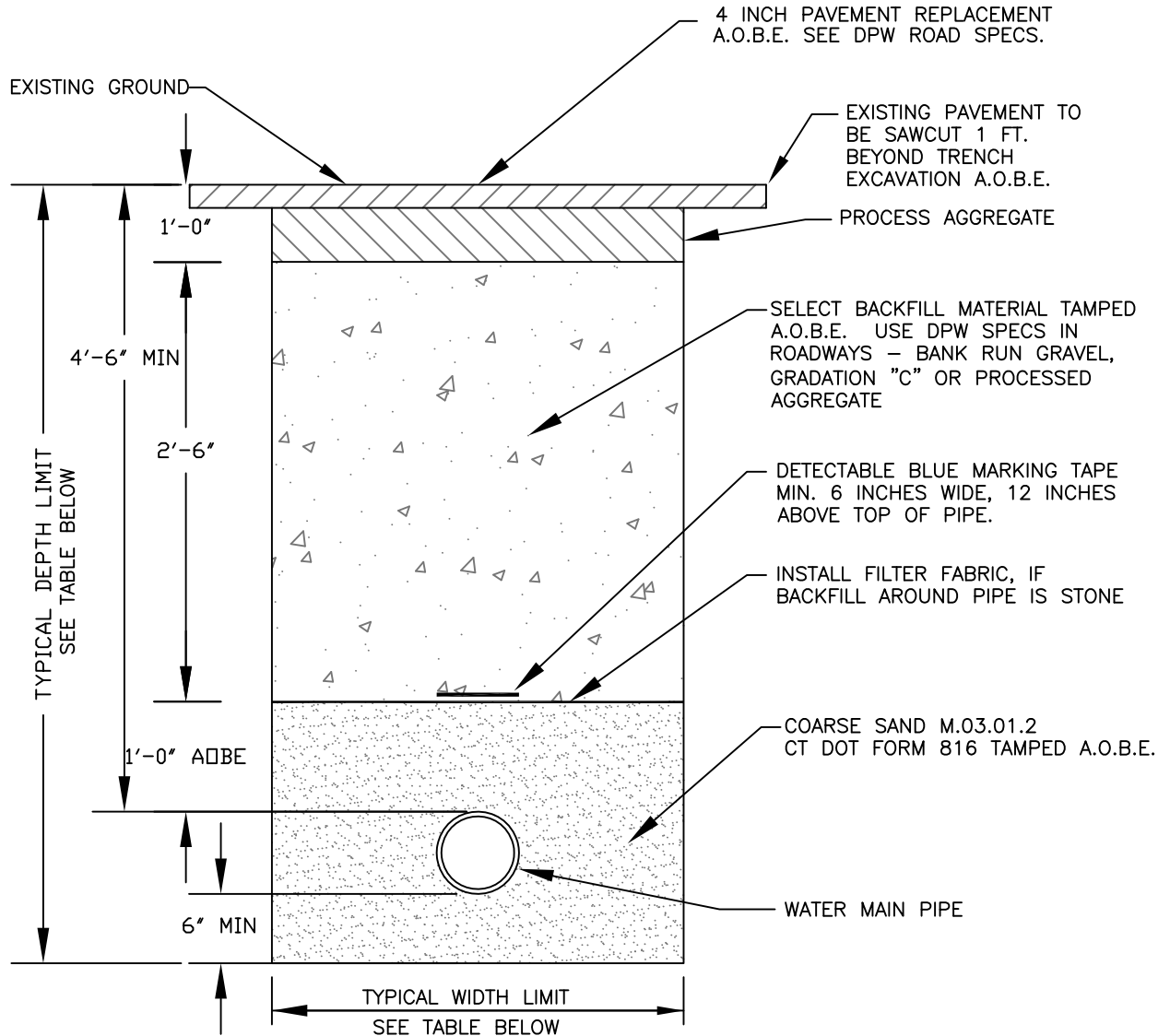
Provide the department with notification at least 48 hours prior to commencement of work. Any water main work requiring a shut down requires a minimum 10 day notification of those customers impacted by the shut down.

AS BUILT: Upon completion of work, 12 inch x 30 inch as-built drawings shall be furnished to the Water Department, for review and approval. Upon approval provide mylar prints and electronic copies in PDF and AutoCAD formats.

PUNCH LISTS: Prior to acceptance of a project the Department will generate a punch list with regard to the project. Two punch list inspections will be included. If more than two inspections are required to accept a project there is a fee that will be charged in accordance of City of Middletown Ordinances.

INSPECTIONS: If it is necessary to provide inspections during non working hours there will be an overtime charge to the contractor.

TYPICAL TRENCH CROSS-SECTION (WATER OR FIRE SERVICE) N.T.S.



TRENCH STANDARD LIMITS

PIPE SIZE	WIDTH	DEPTH
6"	3.0'	5.5'
8"	3.0'	5.6'
12"	3.0'	5.9'
16"	3.4'	6.2'
20"	3.9'	6.6'
24"	4.3'	6.9'

NOTE:

PROVIDE GATE VALVE NUT EXTENSION IF NUT IS DEEPER THAN THREE FEET BELOW FINAL GRADE. (A.O.B.E.). THE NUT EXTENSION SHALL BE A GENECO MAIN VALVE STEM EXTENSION PART NO. 5VR-D.



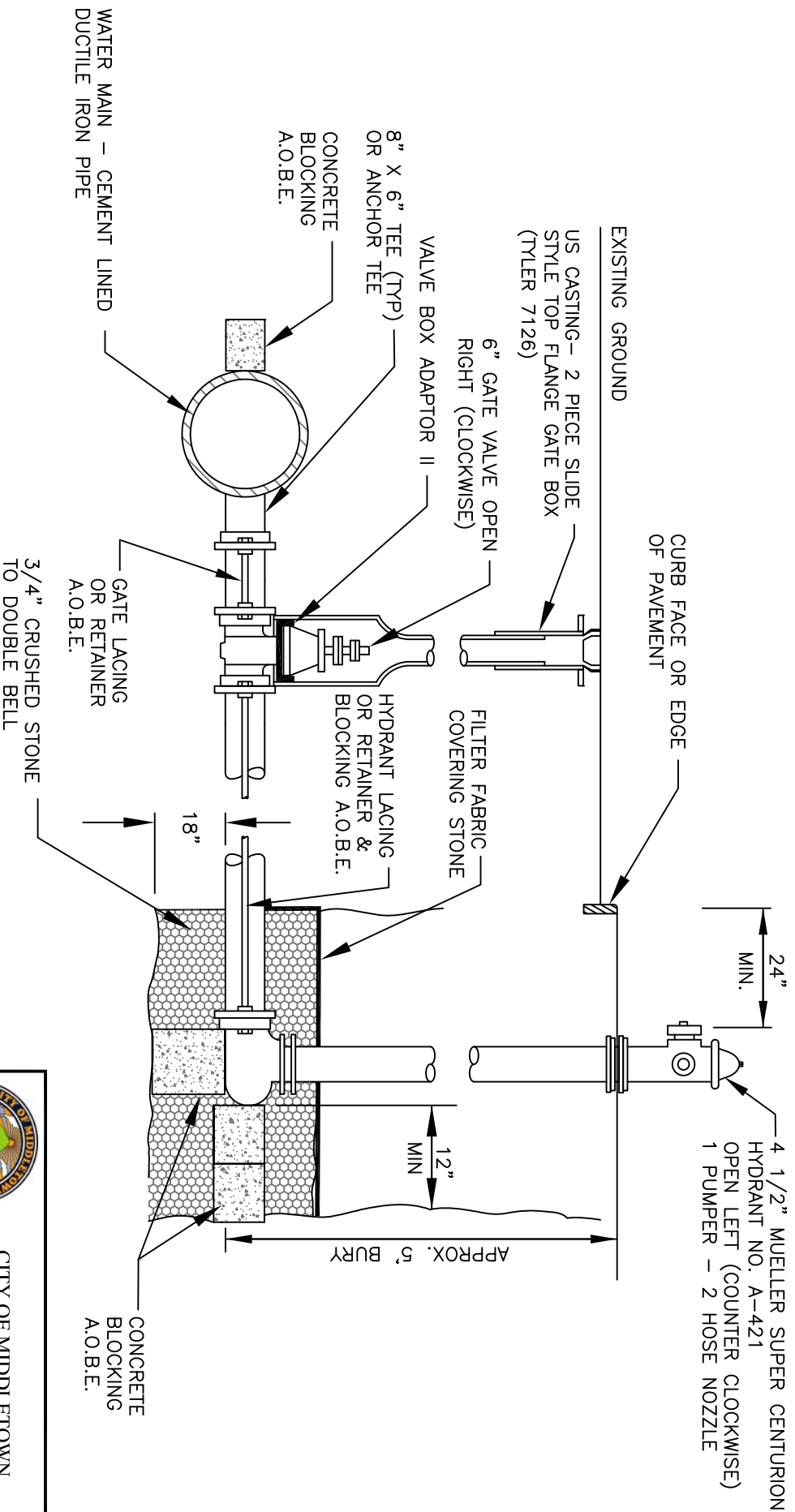
CITY OF MIDDLETOWN
WATER & SEWER DEPARTMENT
ENGINEERING DIVISION

WATER SYSTEM SPECIFICATIONS TYPICAL TRENCH CROSS-SECTION


DATE: SEPTEMBER 2016 SHEET 1 OF 9

TYPICAL HYDRANT & GATE VALVE DETAIL

N.T.S.



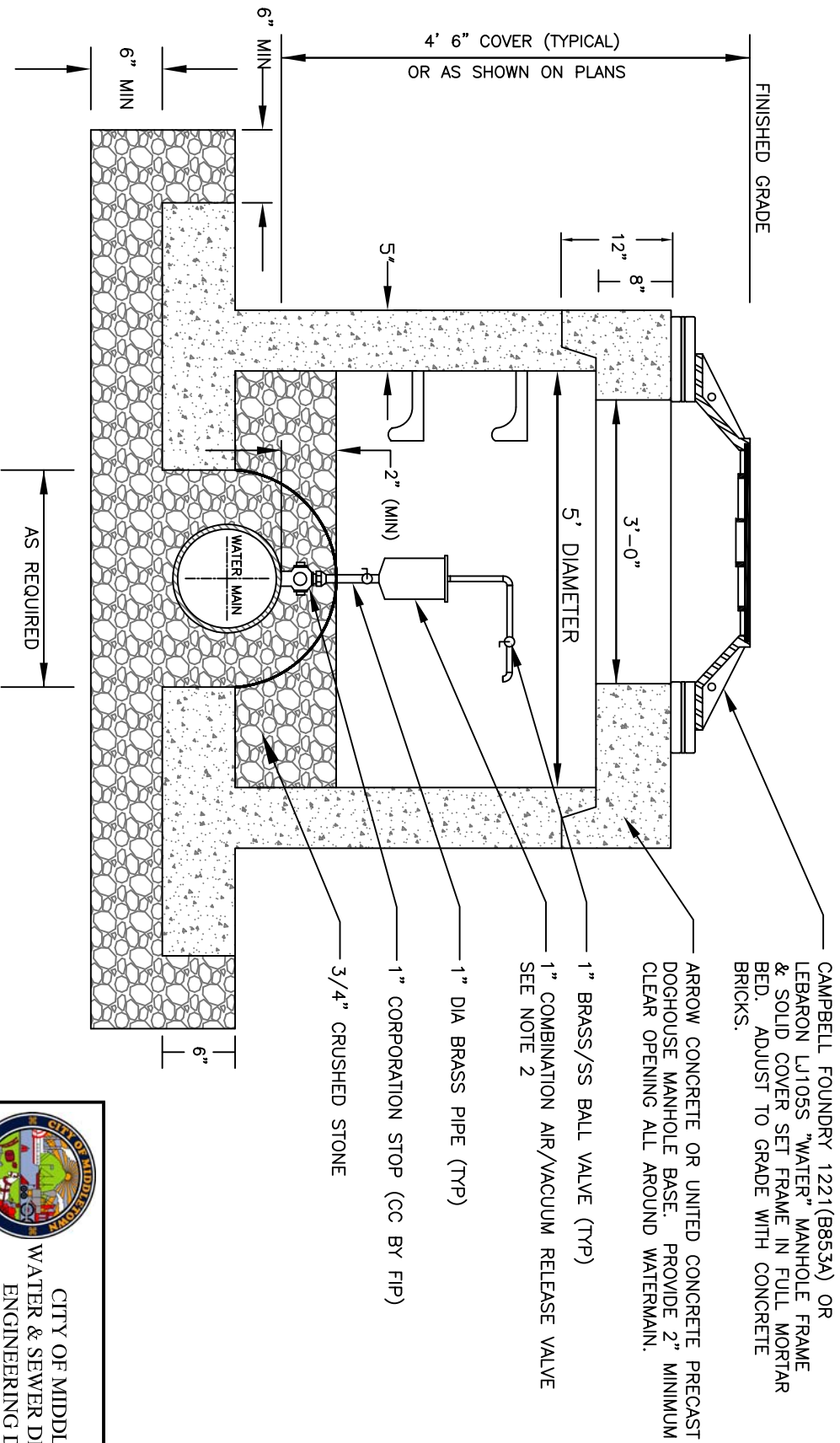
- NOTES:**
1. ALL HYDRANTS TO BE PAINTED IN ACCORDANCE WITH STANDARD CITY OF MIDDLETOWN SPECIFICATIONS.
 2. GRADE ADJUSTMENT IS LIMITED TO A ONE FOOT (1') RISER. ADDITIONAL ADJUSTMENT TO BE MADE THROUGH FEED LINE OFFSET.
 3. TYPICAL HYDRANT BURY DEPTH IS APPROXIMATELY FIVE FEET (5').
 4. PLACE MINIMUM OF 6 CUBIC FEET OF 3/4" STONE FOR HYDRANT BLEED OFF BELOW WEEP HOLE.
 5. INSTALL HYDRANT: FACE OF CURB OR EDGE OF PAVEMENT TO FACE OF PUMPER CAP MIN. 2 FEET.




CITY OF MIDDLETOWN
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WATER SYSTEM SPECIFICATIONS
**TYPICAL HYDRANT & GATE VALVE
DETAIL**

TYPICAL AIR RELEASE VALVE DETAIL N.T.S.



- NOTES**
1. VERIFY WATERMAIN SIZE WITH MIDDLETOWN WATER DEPARTMENT PRIOR TO ORDERING DOGHOUSE MANHOLE.
 2. PROVIDE COMBINATION AIR RELEASE AND VACUUM VALVE NO. 201C BY VAL-MATIC VALVE & MANUFACTURING OR APPROVED EQUAL.



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WATER SYSTEM SPECIFICATIONS
**TYPICAL AIR RELEASE VALVE
DETAIL**

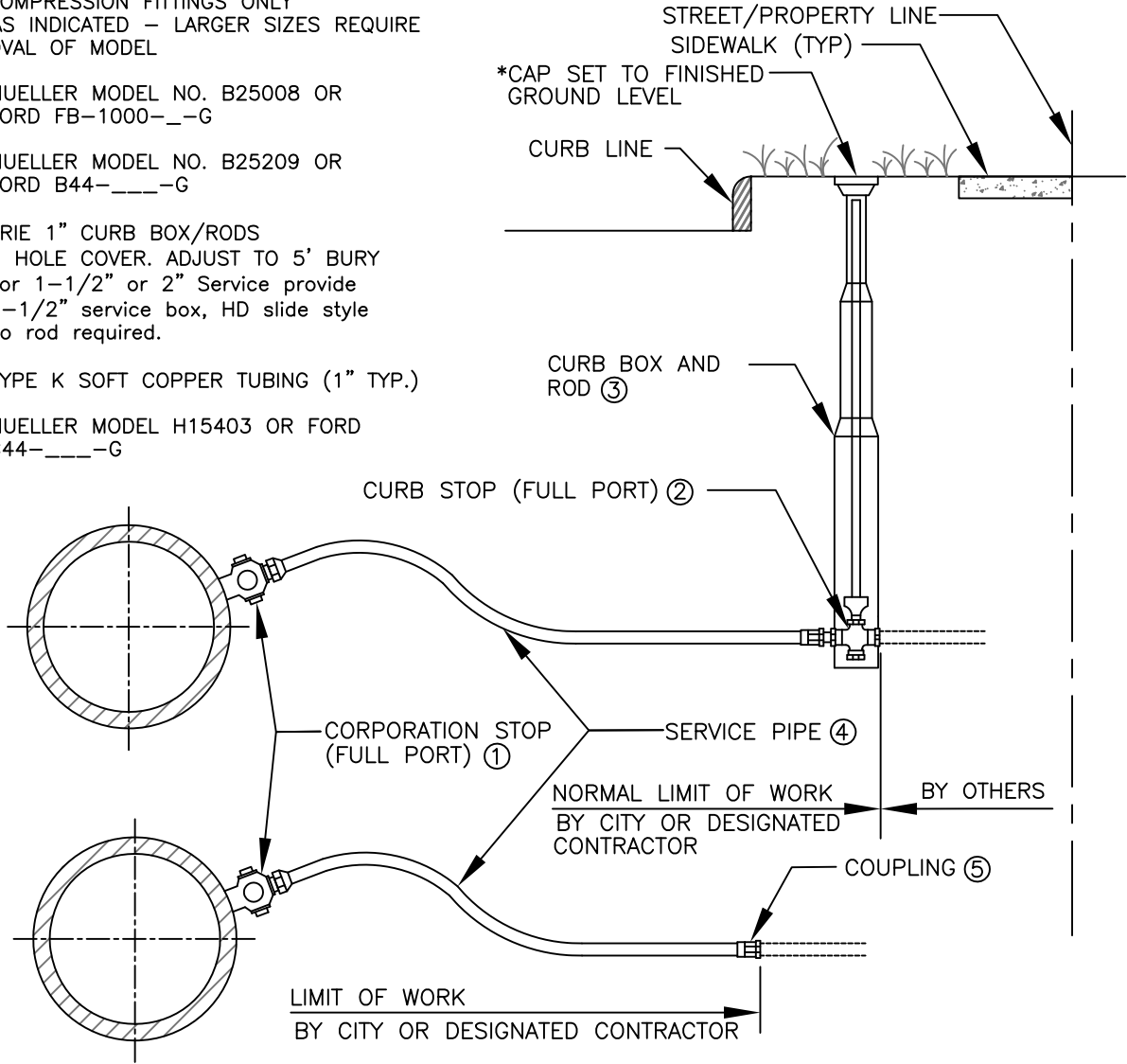
TYPICAL WATER SERVICE CONNECTION

N.T.S.

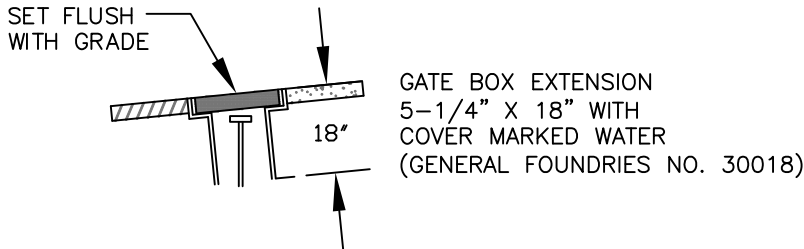
NOTES:

USE COMPRESSION FITTINGS ONLY
 SIZE AS INDICATED – LARGER SIZES REQUIRE
 APPROVAL OF MODEL

1. MUELLER MODEL NO. B25008 OR FORD FB-1000--G
2. MUELLER MODEL NO. B25209 OR FORD B44----G
3. ERIE 1" CURB BOX/RODS
 2 HOLE COVER. ADJUST TO 5' BURY
 For 1-1/2" or 2" Service provide
 2-1/2" service box, HD slide style
 no rod required.
4. TYPE K SOFT COPPER TUBING (1" TYP.)
5. MUELLER MODEL H15403 OR FORD C44----G



ALTERNATE RENEWED SERVICE



* –CURB BOXES LOCATED IN ANY TYPE OF VEHICULAR OR PEDESTRIAN TRAVEL WAY, DRIVEWAY, SIDEWALK, ETC., SHALL BE INSTALLED WITH A GATE BOX EXTENSION OVER THE CURB BOX.

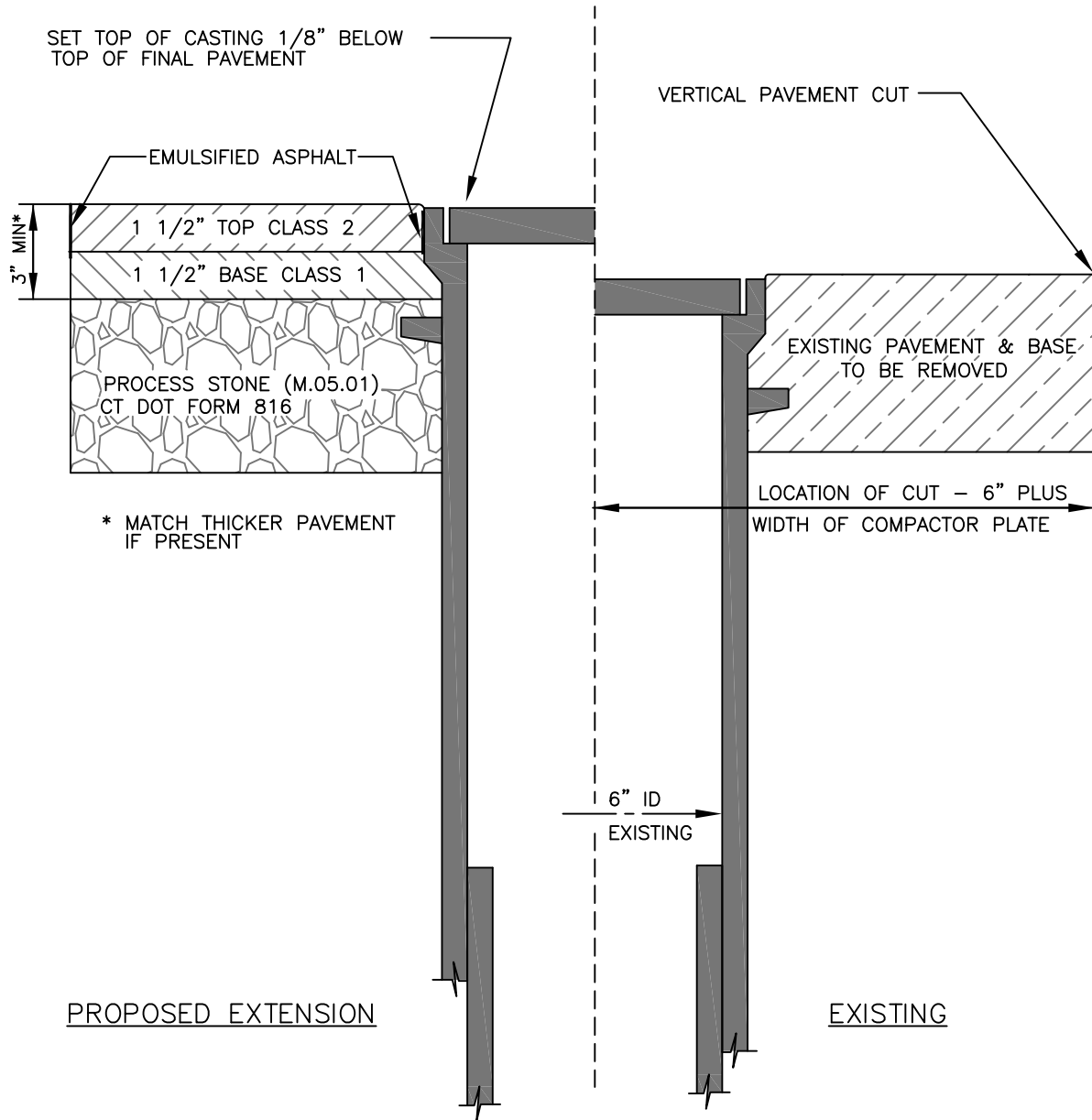


CITY OF MIDDLETOWN
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**WATER SYSTEM SPECIFICATIONS
 TYPICAL WATER SERVICE DETAIL**

TYPICAL RAISING OF GATE BOX TO GRADE

N.T.S.



NOTES:

1. EXTEND EXISTING RISER TO NEW GRADE IF FEASIBLE AND REUSE EXISTING COVER.
2. IF EXISTING GATE BOX CAN'T BE EXTENDED THEN USE A RISER EXTENSION, GENERAL FOUNDARIES 30018. NO RISER RINGS WILL BE ALLOWED.
3. PROVIDE GENECO GATE VAVLE NUT EXTENSION 5VR-D IF NEEDED.



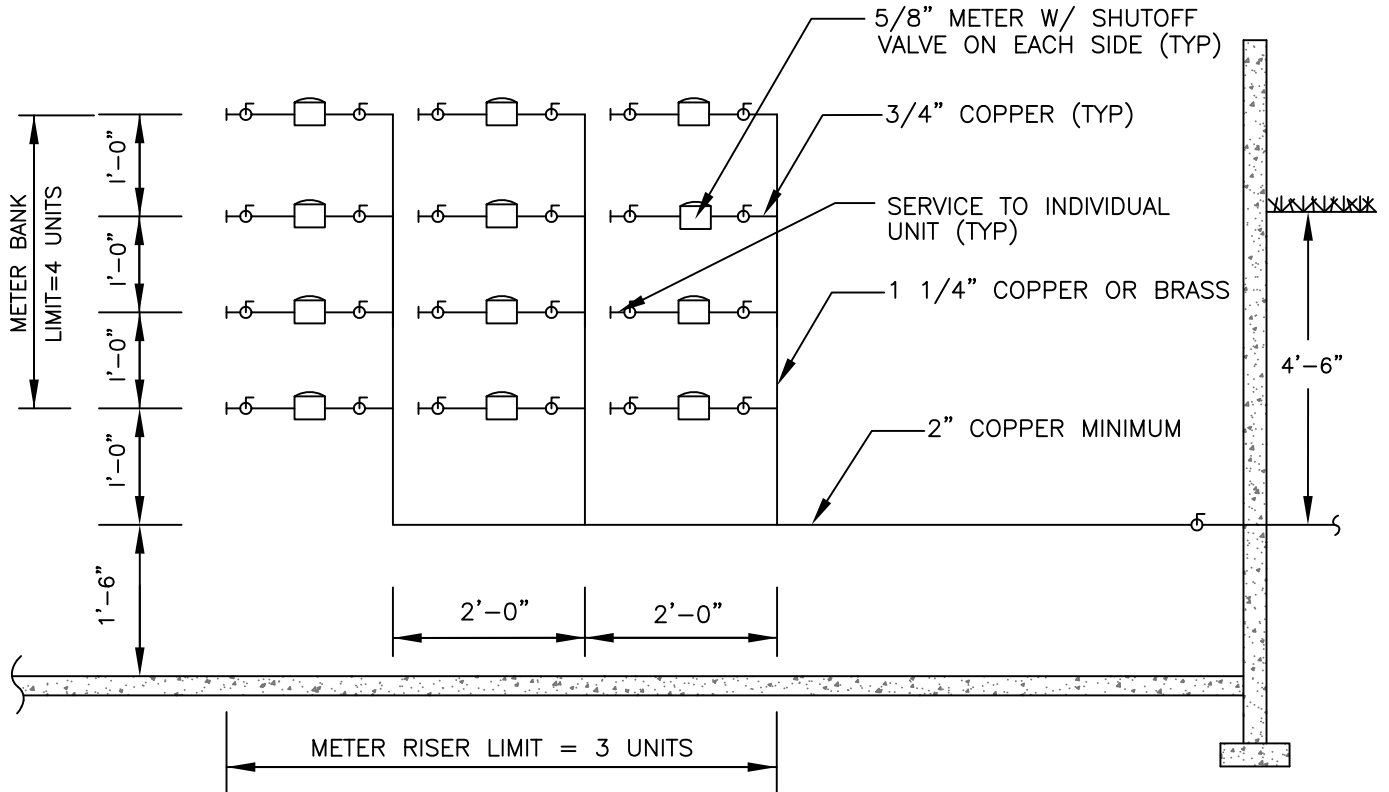
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WATER SYSTEM SPECIFICATIONS
TYPICAL RAISING OF GATE BOX

DATE: SEPTEMBER 2016 SHEET 6 OF 9

TYPICAL METER INSTALLATION

N.T.S.



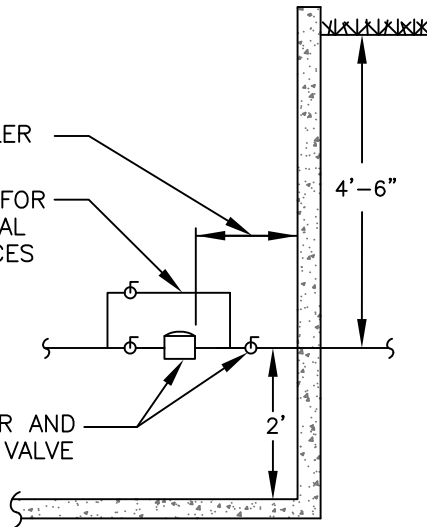
NOTES:

1. EXACT MANIFOLD CONFIGURATION SUBJECT TO WATER DEPARTMENT APPROVAL.
2. MASTER METER REQUIRED FOR APARTMENT COMPLEXES. INDIVIDUAL CITY METERS NOT ALLOWED.
3. MULTI-METER CONFIGURATION FOR CONDOMINIUM AND PROPERTY OWNER'S ONLY. NO MASTER METER REQUIRED.
4. STACKED METERS ARE REQUIRED TO HAVE SEALED HEADS. OWNER IS RESPONSIBLE FOR THE COST TO UPGRADE TO METERS WITH SEALED HEADS.

MIN. 6" CLEAR FOR SERVICES 1" AND SMALLER

BYPASS ONLY ALLOWED FOR NON-RESIDENTIAL CRITICAL CUSTOMERS WITH SERVICES GREATER THAN 1 INCH.

MAIN METER AND SHUT OFF VALVE

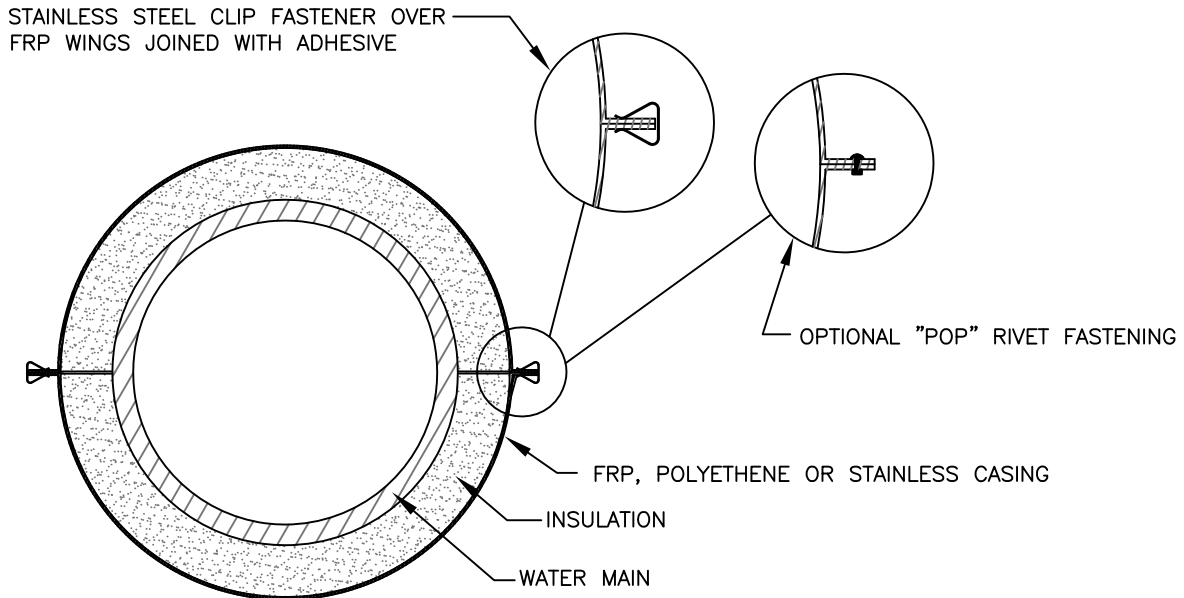


CITY OF MIDDLETOWN
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WATER SYSTEM SPECIFICATIONS
TYPICAL WATER METER
INSTALLATION

TYPICAL PRE-INSULATED WATER MAIN PIPING

N.T.S.



NOTES:

WHERE THE POTABLE WATER MAIN IS EXPOSED OUTDOORS, OR BURIED LESS THAN 36 INCHES BELOW THE SURFACE IT SHALL BE INSULATED AND PROTECTED AS HEREIN DESCRIBED.

INSULATION SHALL BE RIGID POLYURETHANE FOAM 3 PCF MINIMUM DENSITY WITH MAXIMUM "K" OF 0.170, 90% MINIMUM CLOSED CELL QUALITY WHEN FOAM HAS CURED.

THE OUTER CASING SHALL BE:

- 1) CONCEALED PIPE – CONTINUOUS FIBERGLASS FILAMENT HELICALLY CROSSWOUND UNDER TENSION WITH ISOPHTHALIC THERMOSETTING POLYESTER RESIN TO 1/16 INCH MINIMUM FINISHED THICKNESS, IT SHALL BE STRUCTURALLY STRONG, CORROSION RESISTANT AND AIR TIGHT; OR HIGH DENSITY POLYETHYLENE 3/16 INCH MINIMUM THICKNESS.
- 2) EXPOSED PIPE – PROVIDE STAINLESS STEEL OUTER JACKET WITH A MINIMUM 22 GAUGE. THE STAINLESS STEEL SHEETS SHALL BE FACTORY Banded WITH 1/2 INCH BANDS EVERY 12 INCHES. THERE SHALL BE AN OVERLAP OF THREE INCHES AT EVERY SEEM.

FIELD JOINTS SHALL BE COMPOSED OF HALF SEGMENTS OF INSULATION AND CASING Banded IN PLACE AND SEALED WITH COMPATIBLE SEALANT OT ADJACENT INSULATION.

PREINSULATED PIPING SYSTEM SHALL BE U.I.P. BY INSULATED PIPE BY URECON LTD., OR APPROVED EQUAL.

FOR SITUATIONS WHERE THE PIPE IS LESS THAN 36 INCHES FROM A STORM WATER STRUCTURE PROVIDE EITHER TWO INCH RIGID INSULATION OR PREINSULATED PIPE IDENTIFIED ABOVE THE LENGTH OF THE STRUCTURE.



CITY OF MIDDLETOWN
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WATER SYSTEM SPECIFICATIONS
TYPICAL RE-INSULATED
WATER MAIN

DATE: SEPTEMBER 2016 SHEET 8 OF 9

