



City of Middletown
WATER & SEWER DEPARTMENT
82 Berlin Street
Middletown, CT 06457
TEL: (860) 343-8085
FAX: (860) 343-8091

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
JULY 2010

- 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 on Bridges and/or railroad crossings. Contact Water Department for exact information.
- WATER SERVICES:** 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.
- FIRE SERVICES:** Same as Water Mains, minimum tap size by the Middletown Water Department is 6 inches.
- VALVES:** 6" to 12" resilient seal; (Clockwise, Open Right).
Mueller, Clow or Kennedy or approved equal.
16 inch and above butterfly; Mueller or Pratt.
Note : Gate valve nut shall be two to 3 1/2 feet below finish grade.
- HYDRANTS:** Mueller Centurion 4-½ inch Barrel, 5 foot bury depth (Counter Clockwise, Open Left). Grade adjustment limited to a one foot riser. Additional adjustment through feed line offset. Place a minimum of six cubic feet of ¾ inch crushed stone for hydrant bleed off below weep holes. Hydrants shall be John Deere reen on the bonnet and caps and John Deere yellow for the remainder
- MINIMUM COVER:** The minimum cover for mains and services is 4 1/2 feet to top of pipe.

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
JULY 2010

--CONTINUED--

- SEPARATION:** The minimum horizontal separation distance shall be 10 feet from sanitary sewers and/or 18 inches vertical. Maintain a minimum of five feet horizontal separation for all other utilities.
- FITTINGS:** Cement lined ductile iron, mechanical joint, size and pressure rating cogmpatible with adjoining pipe. No 90 degree bends allowed, use two 45 degree bends instead.
- RESTRAINTS:** Joint Restraint Harness or EBAA Megalugs are to be installed at all fittings. Joint restraints are to be installed on a minimum of two pipe joints either side of the fittings (40 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 retainered and blocked, or clamped and laced, A.O.B.E.. Anchor tees are acceptable.
- DEAD ENDS:** Shall be retainered and blocked, or clamped and laced, A.O.B.E. (3 lengths or 60 feet minimum). Blow off to be installed with a curb stop or gate valve.
- 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 accord 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. All other tapping arrangements use Smith Blair 622 Tapping Sleeves or approved equal. 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.

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
JULY 2010
--CONTINUED--

- 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), Pressure test once bacterial sample passes.
- DISINFECTION:** The contractor may secure in place chlorine tablets during installation to obtain a minimum chlorine concentration of 50 ppm for a duration of 48 hours. The contractor may continuously inject a chlorine solution to acquire a minimum concentration of 25 ppm. It shall be injected under pressure through a corporation cock for a minimum of 24 hours or A.O.B.E.. 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.
- 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 keep 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.

GENERAL REQUIREMENTS
WATER MAIN AND SERVICE INSTALLATION
JULY 2010

--CONTINUED--

- GRID SPACING:** Grid spacing shall not exceed approximately 100 feet per inch of pipe diameter.
i.e.: 8 inch - 800 feet
12 inch - 1200 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.
- 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.
- 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 two feet 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.
- 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
JULY 2010
--CONTINUED--

INFORMATION: All installations, building connections, valve operations, and test procedures must be cleared with the City of Middletown Water Department. Phone Number: 343-8085. Use the following extensions:

Chief Engineer – 152,
Assistant Chief Engineer – 155
Markouts/Inspections – 151
Backflow Prevention – 202
Distribution – 202

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.

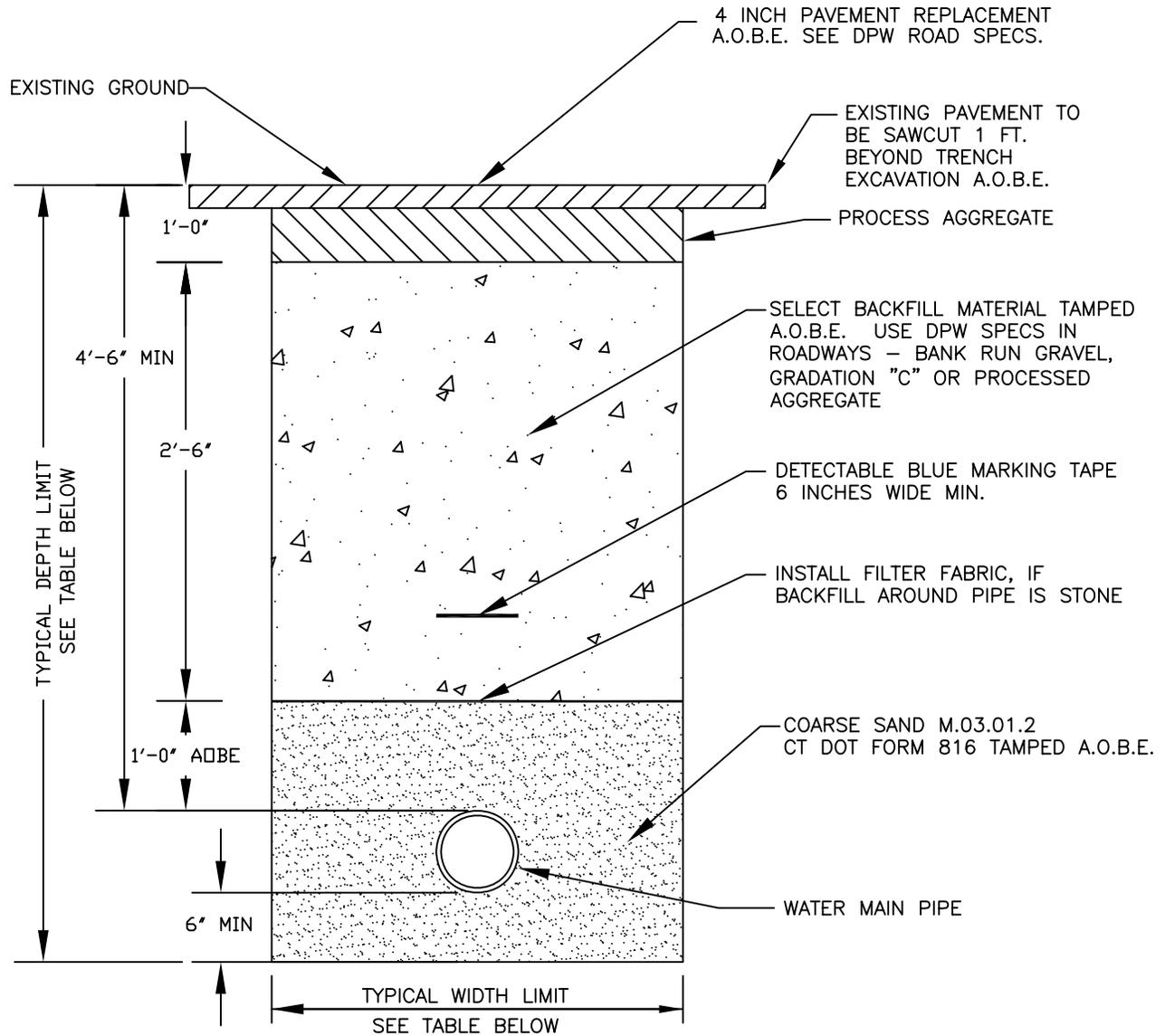
AS BUILT: Upon completion of work, 12 inch x 30 inch as-built drawings shall be furnished to the Water Department, for review and approval. Upon approval provide both mylars and electronic copy in AutoCAD 2000. See Attached for Examples.

PUNCH LISTS: Prior to acceptance of a project the Department with 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. (AOBE). THE NUT EXTENSION SHALL BE A GENECO MAIN VALVE STEM EXTENSION PART NO. 5VR-D.



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ENGINEERING DIVISION

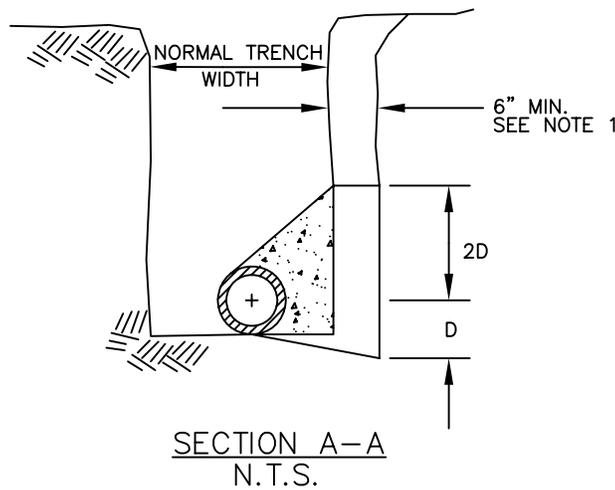
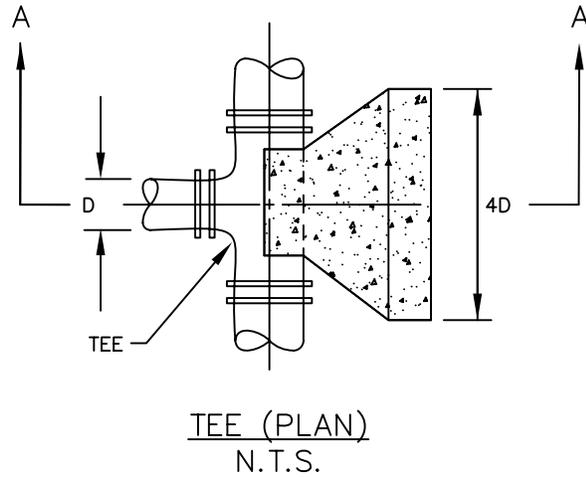
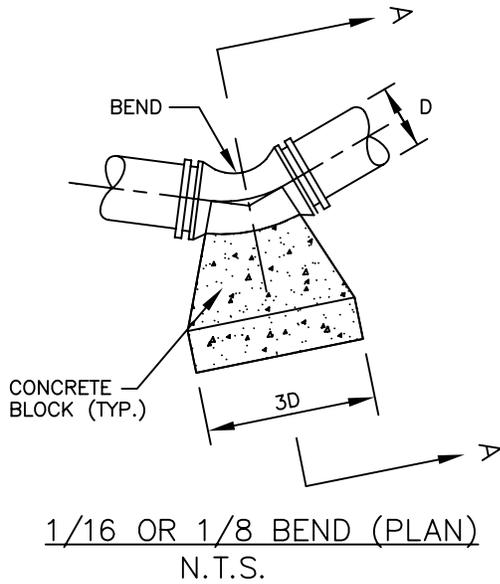
WATER SYSTEM SPECIFICATIONS TYPICAL TRENCH CROSS-SECTION (WATER OR FIRE SERVICE)

DATE: JULY 2010

SHEET 1 OF 9

TYPICAL THRUST BLOCK DETAIL

N.T.S.



NOTES:

1. TRENCH SHALL BE EXCAVATED TO FIRM MATERIAL IMMEDIATELY PRIOR TO PLACING CONCRETE BLOCKS OR POURING CONCRETE.
2. INSTALL SOLID CONCRETE BLOCKS WITH OAK WEDGES. (TYPICAL)
3. POURED CONCRETE THRUST BLOCK SHALL BE 3,000 PSI, A.O.B.E.



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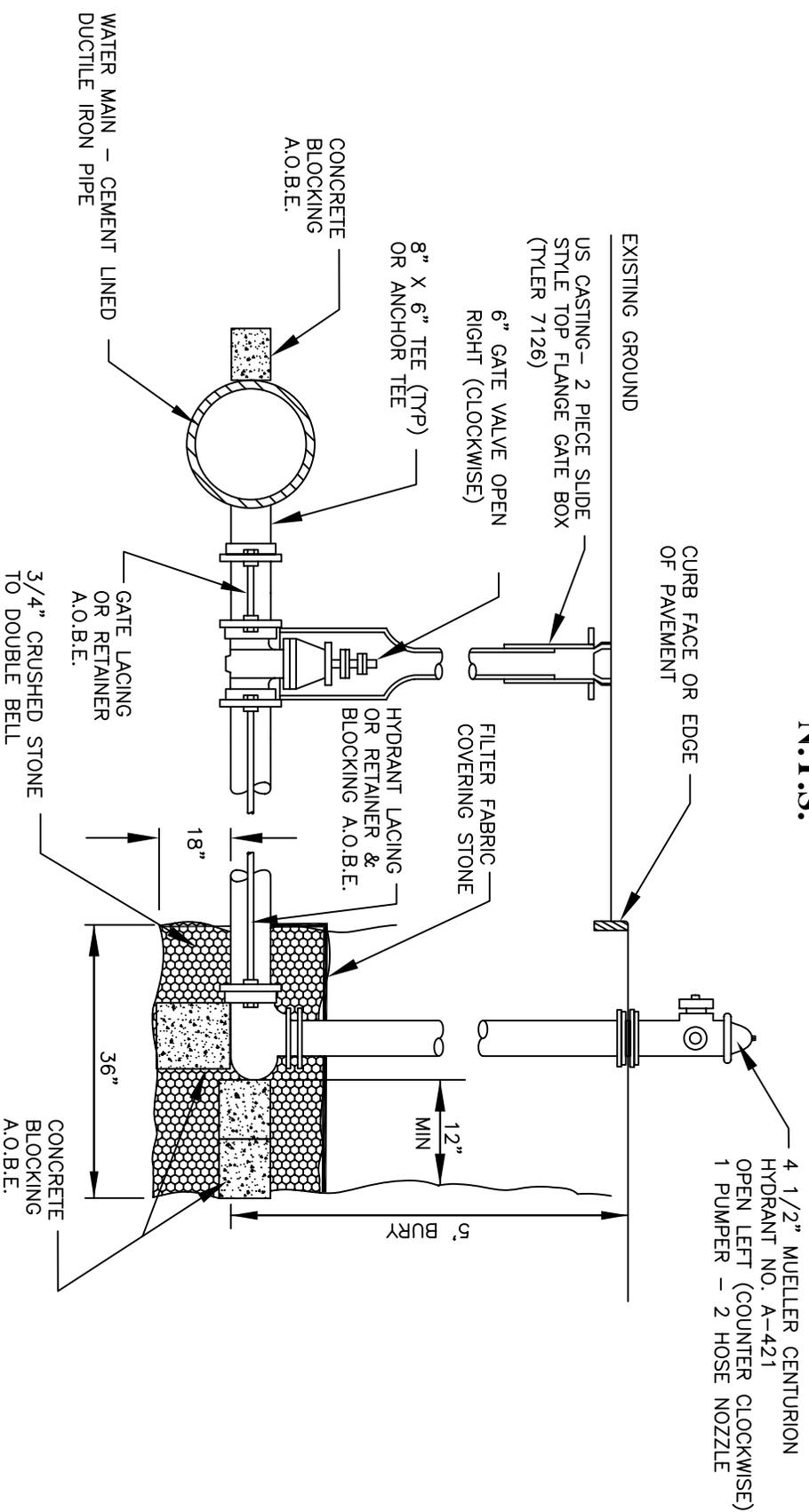
**WATER SYSTEM SPECIFICATIONS
TYPICAL THRUST BLOCK DETAIL**

DATE: JULY 2010

SHEET 2 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. HYDRANT BURY DEPTH TO BE 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.

4 1/2" MUELLER CENTURION
 HYDRANT NO. A-421
 OPEN LEFT (COUNTER CLOCKWISE)
 1 PUMPER - 2 HOSE NOZZLE



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WATER SYSTEM SPECIFICATIONS
 TYPICAL HYDRANT & GATE VALVE
 DETAIL

DATE: JULY 2010

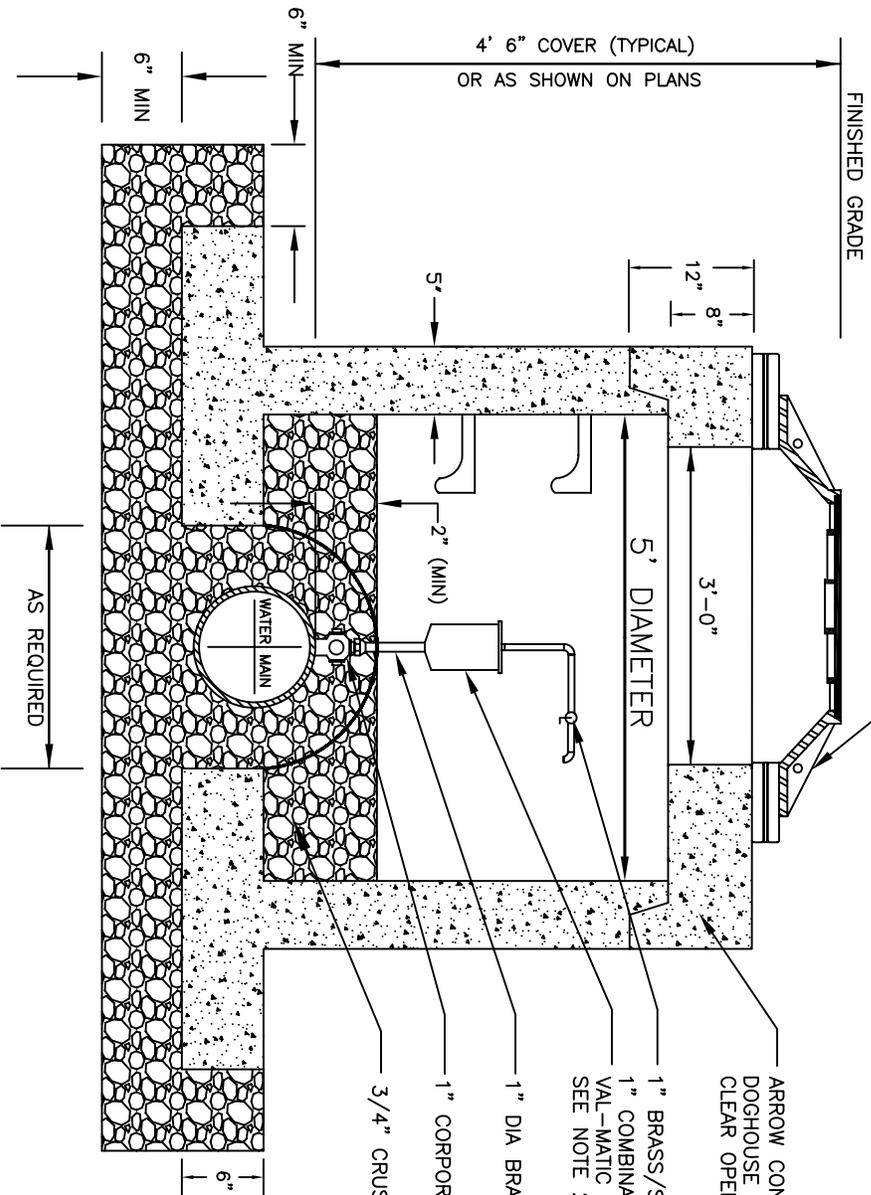
SHEET 3 OF 9

TYPICAL AIR RELEASE VALVE DETAIL

N.T.S.

CAMPBELL FOUNDRY 1221(B853A) OR
LEBARON L1105S "WATER" MANHOLE FRAME
& SOLID COVER SET FRAME IN FULL MORTAR
BED. ADJUST TO GRADE WITH CONCRETE
BRICKS.

- 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.



ARROW CONCRETE OR UNITED CONCRETE PRECAST DOGHOUSE MANHOLE BASE. PROVIDE 2" MINIMUM CLEAR OPENING ALL AROUND WATERMAIN.

1" BRASS/SS BALL VALVE
1" COMBINATION AIR/VACUUM RELEASE VALVE
VAL-MATIC 201C
SEE NOTE 2

1" DIA BRASS PIPE (TYP)

1" CORPORATION STOP (CC BY FIP)

3/4" CRUSHED STONE



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WATER SYSTEM SPECIFICATIONS
TYPICAL AIR RELEASE VALVE
DETAIL

DATE: JULY 2010

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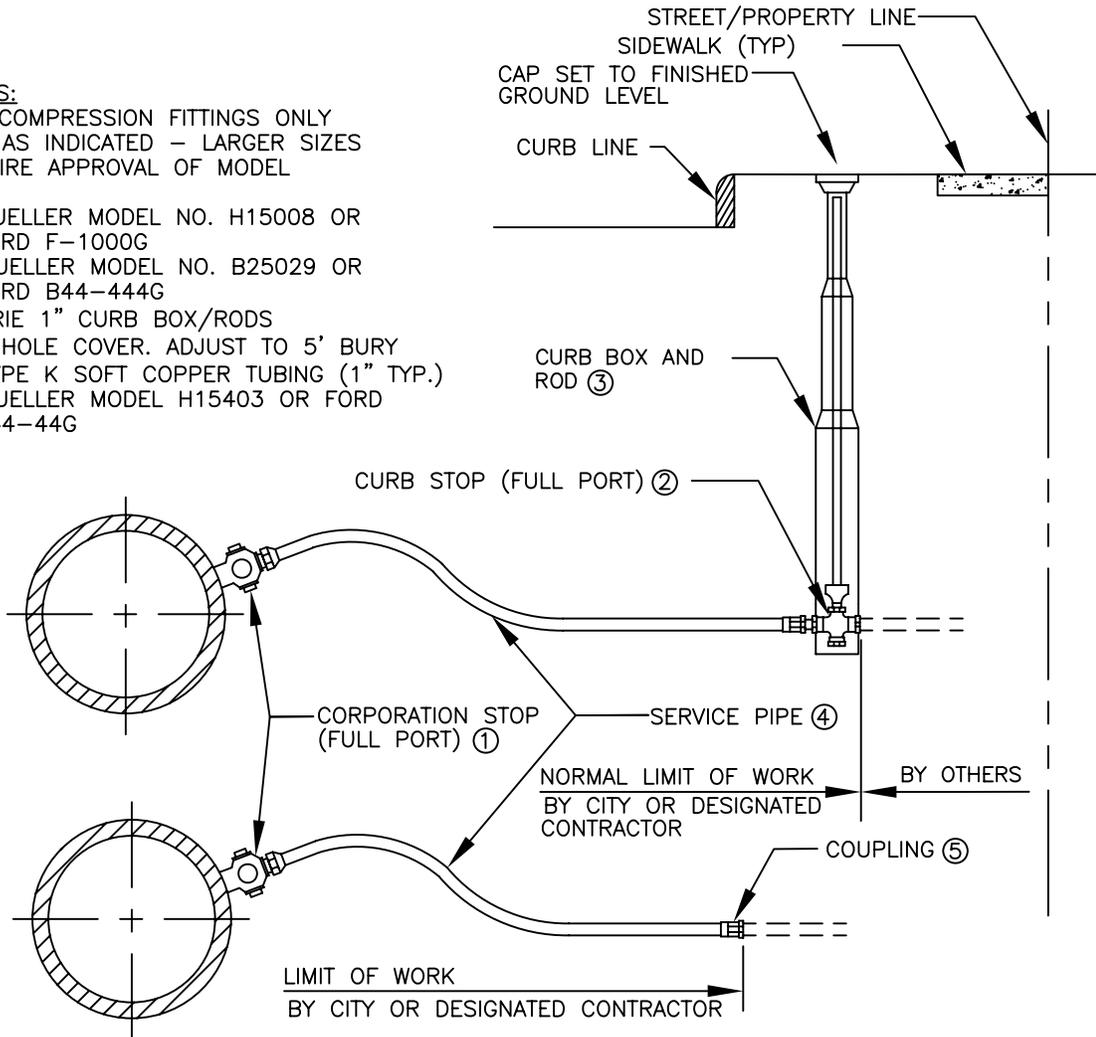
TYPICAL WATER SERVICE CONNECTION

N.T.S.

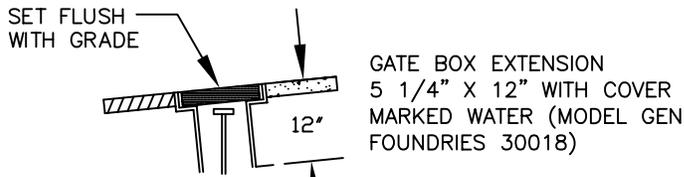
NOTES:

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

1. MUELLER MODEL NO. H15008 OR FORD F-1000G
2. MUELLER MODEL NO. B25029 OR FORD B44-444G
3. ERIE 1" CURB BOX/RODS
 2 HOLE COVER. ADJUST TO 5' BURY
4. TYPE K SOFT COPPER TUBING (1" TYP.)
5. MUELLER MODEL H15403 OR FORD C44-44G



ALTERNATE RENEWED SERVICE



IF CURB BOX IS LOCATED IN ANY TYPE OF VEHICULAR OR PEDESTRIAN TRAVEL WAY, DRIVEWAY, SIDEWALK, ETC., INSTALL A GATE BOX EXTENSION OVER THE CURB BOX.



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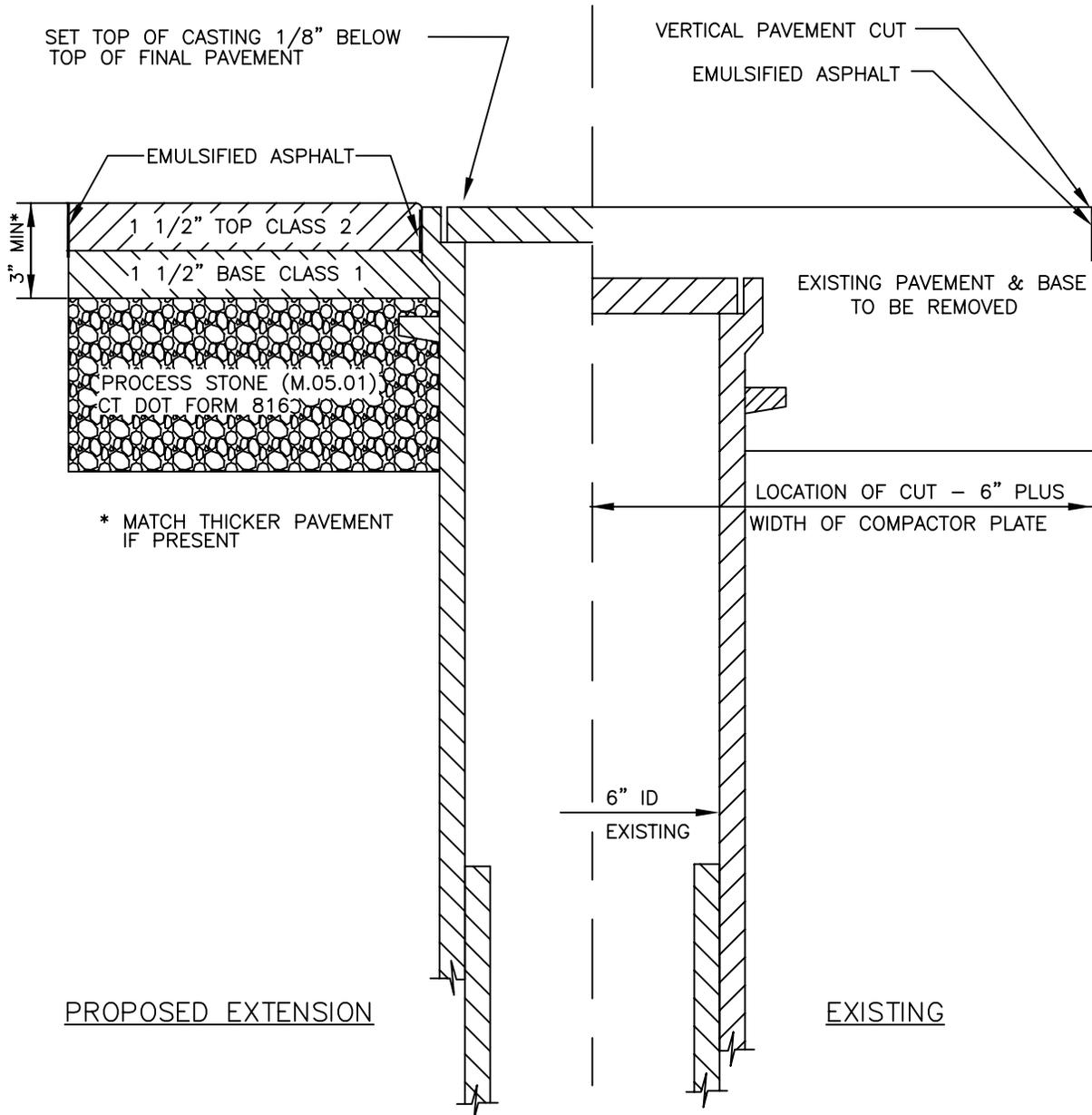
**WATER SYSTEM SPECIFICATIONS
 TYPICAL WATER SERVICE DETAIL**

DATE: JULY 2010

SHEET 5 OF 9

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, GEN FOUNDARIES 30018.
3. PROVIDE GATE VALVE NUT EXTENSION IF NEEDED.



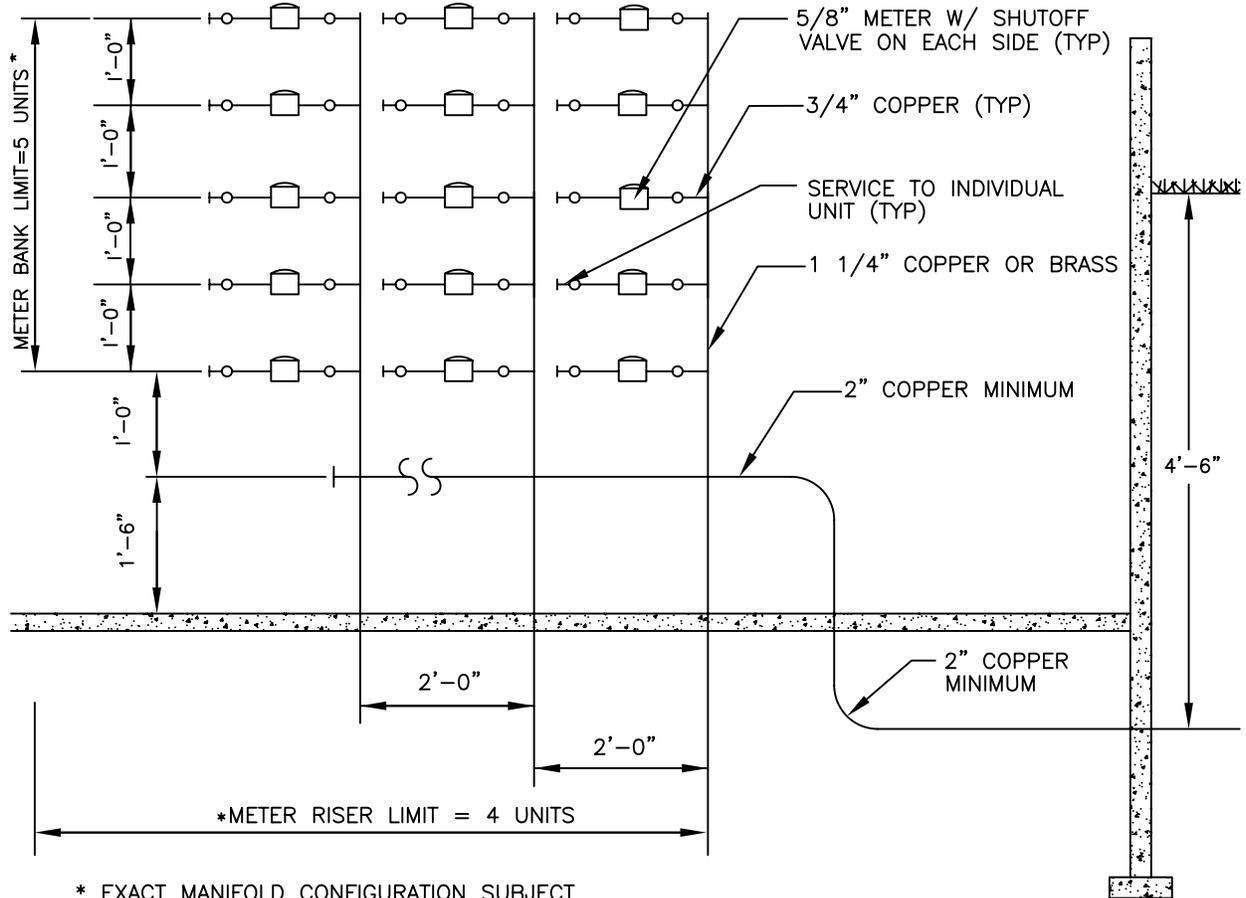
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ENGINEERING DIVISION

**WATER SYSTEM SPECIFICATIONS
TYPICAL RAISING OF GATE BOX TO
GRADE**

DATE: JULY 2010

SHEET 6 OF 9

TYPICAL MULTI-UNIT METER MANIFOLD N.T.S.



* EXACT MANIFOLD CONFIGURATION SUBJECT TO WATER DEPARTMENT APPROVAL



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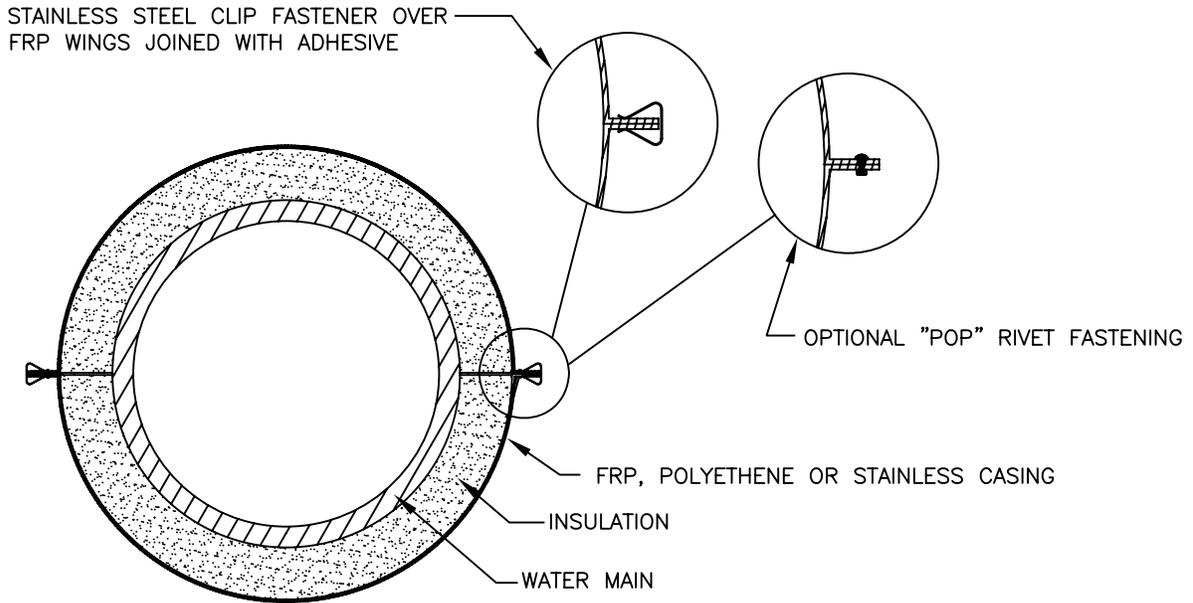
WATER SYSTEM SPECIFICATIONS
TYPICAL MULTI-UNIT METER
MANIFOLD

DATE: JULY 2010

SHEET 7 OF 9

TYPICAL PREINSULATED 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. 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 BY INSULATING PIPING SYSTEMS, INC., 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 PREINSULATED WATER
MAIN PIPING**

DATE: JULY 2010

SHEET 8 OF 9

