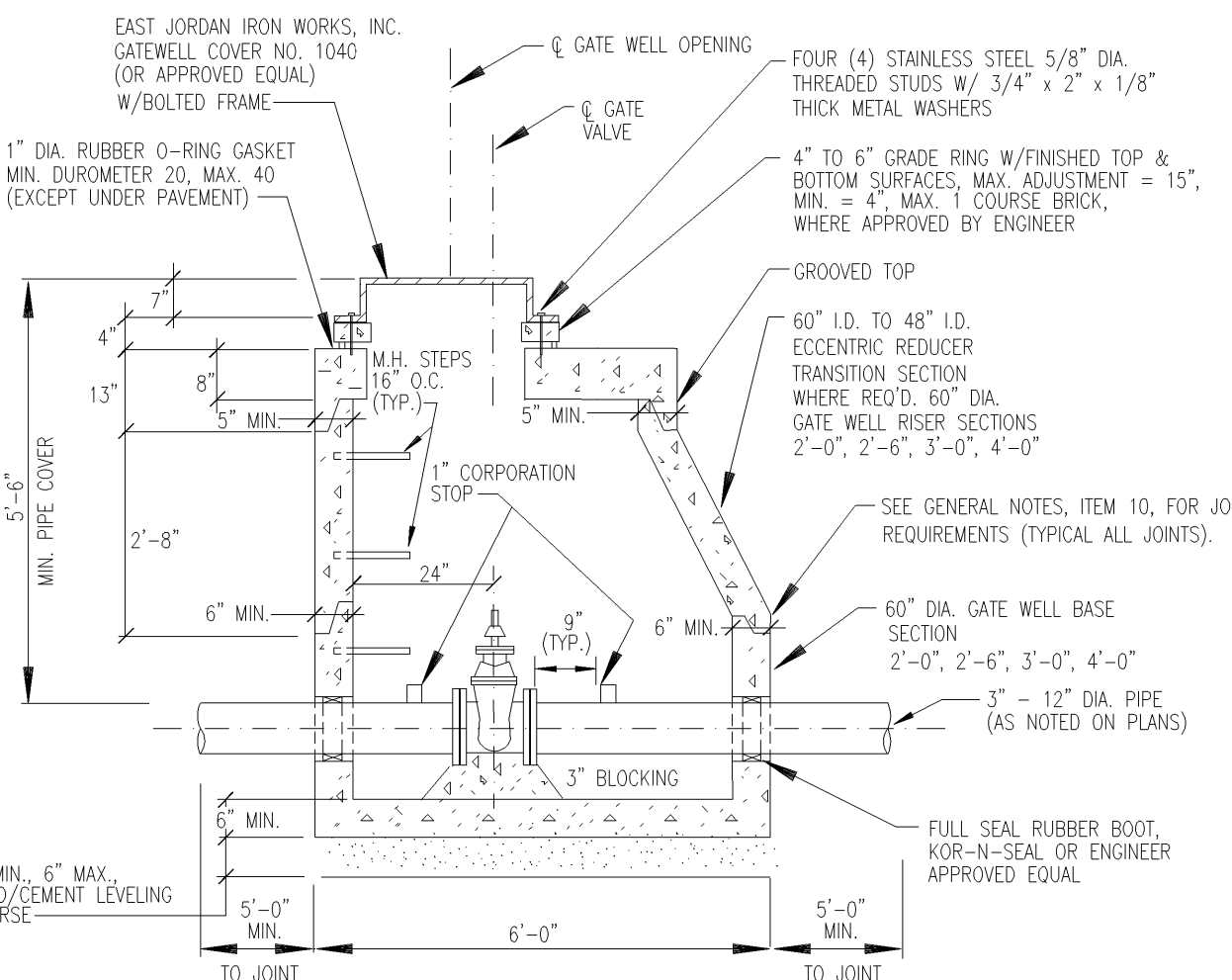
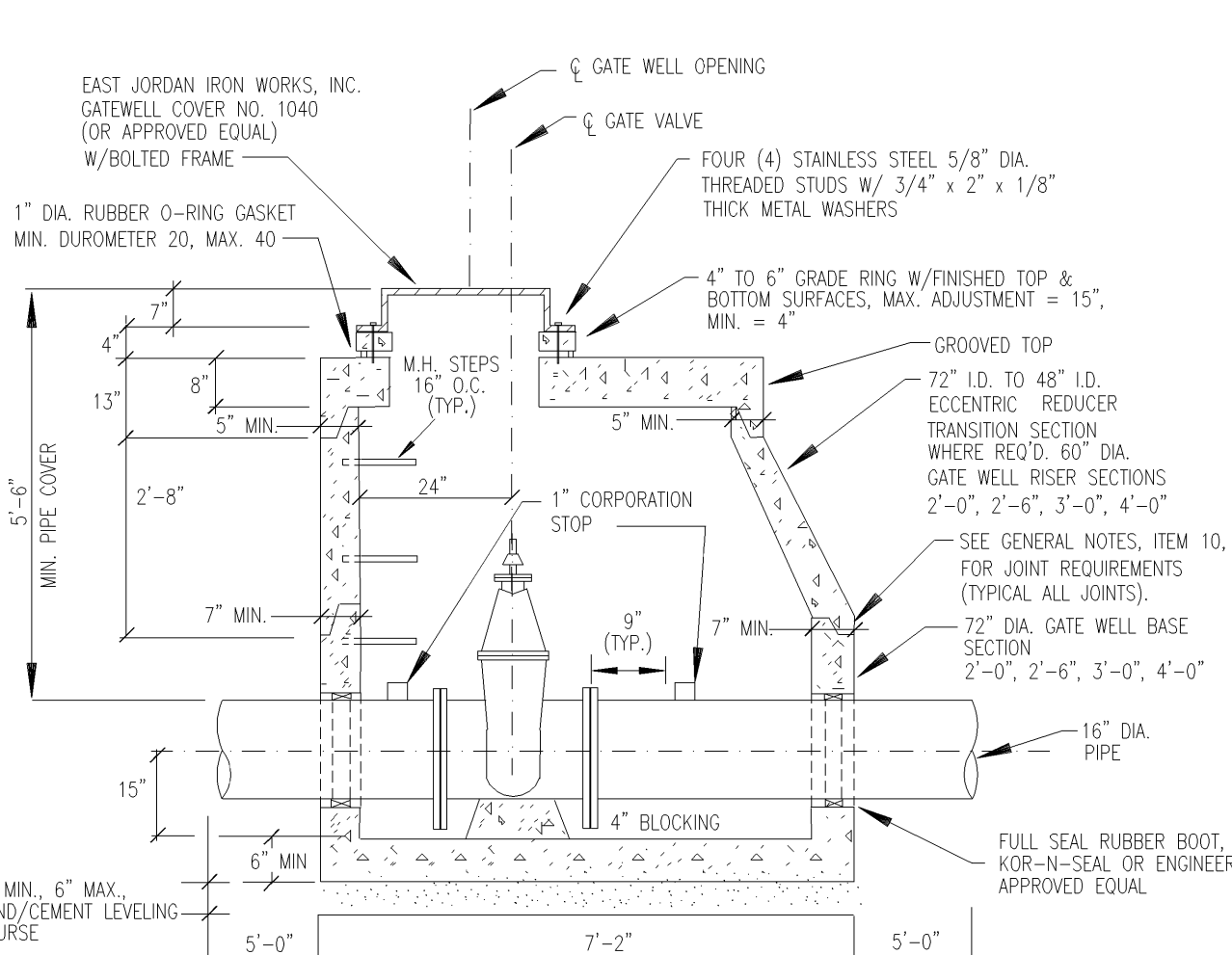


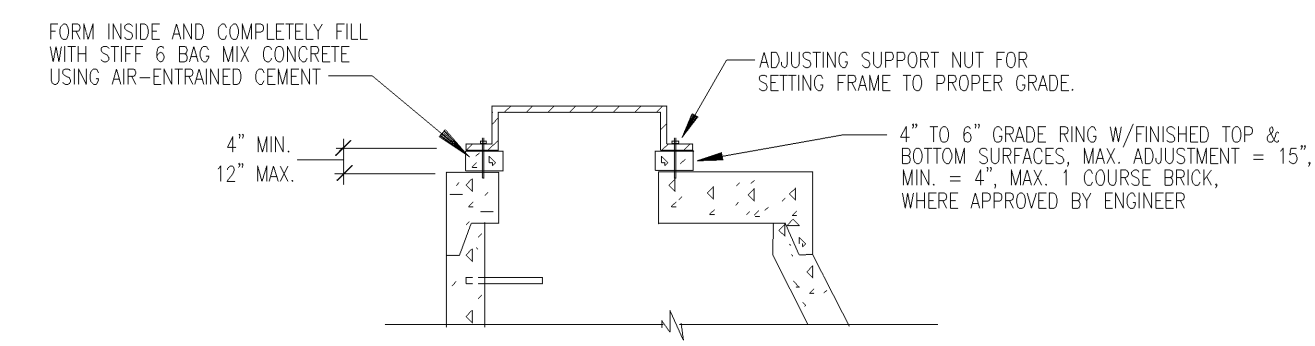
GATE VALVE AND WELL DETAILS



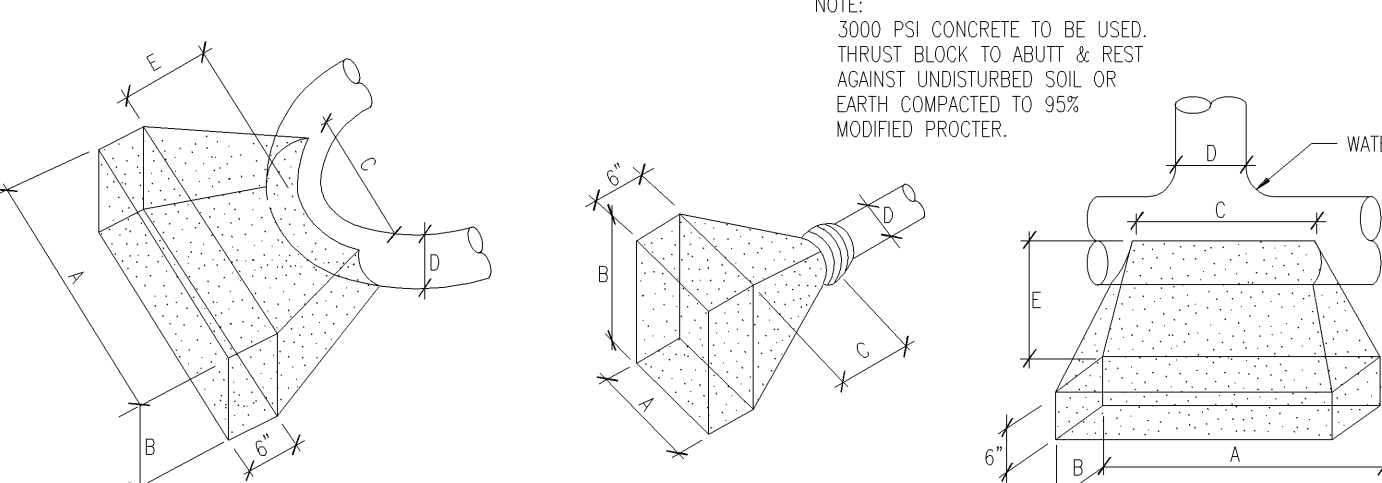
3" THRU 12" GATE WELL



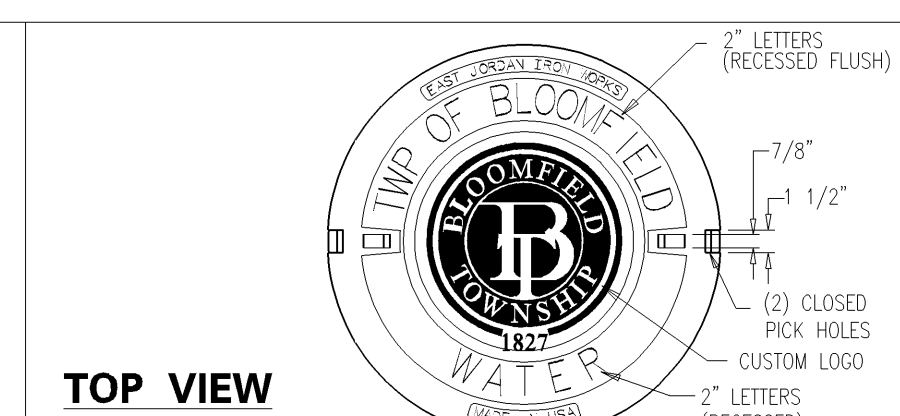
16" GATE WELL



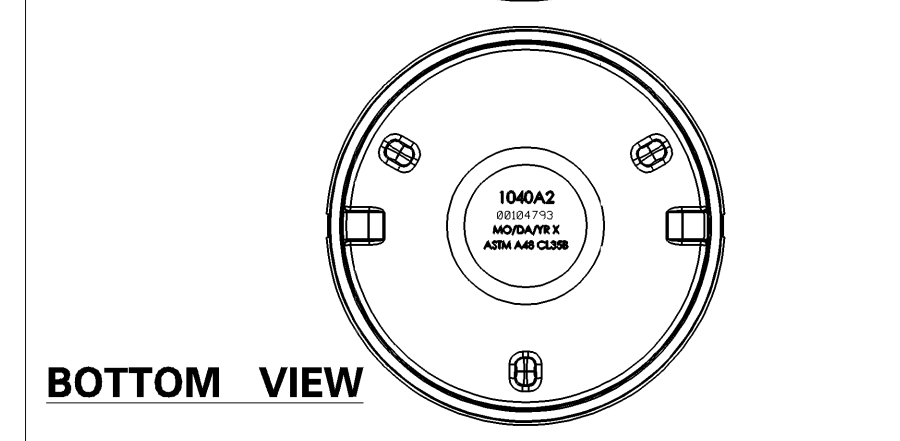
GATE WELL TOPS WITHIN PAVEMENT AREAS



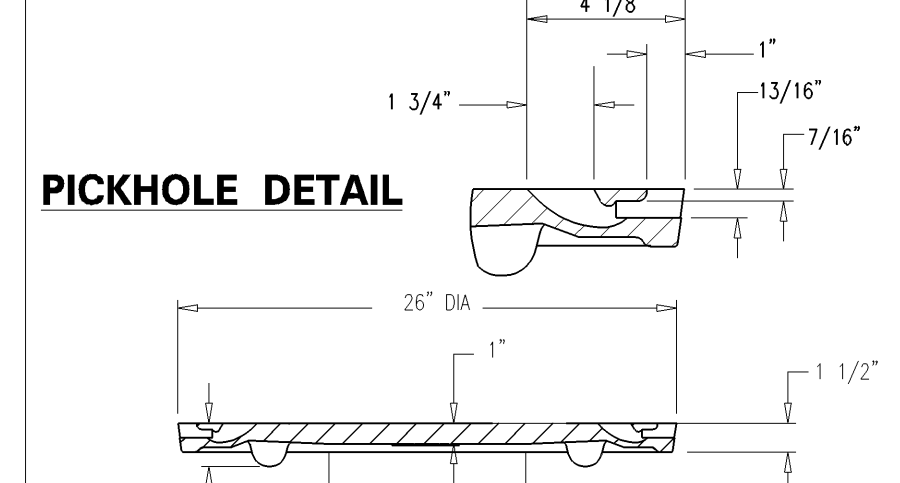
FOR 90° BENDS OR SMALLER					FOR PLUGS				FOR TEES				
D	A	B	C	E MIN.	D	A	B	C MIN.	D	A	B	C	E MIN.
20"	8"	6.5"	3.5"	2.5"	20"	7"	5"	2.5"	20"	6.5"	4.5"	3.5"	3"
16"	6"	4"	2.5"	2"	16"	4"-10"	4"-10"	2"	16"	4"-8"	4"-8"	2.5"	2.75"
12"	4"	3"	2"	1.75"	12"	4"-4"	3"	1"-9"	12"	4"	3"	2"	2.5"
10"	3"	3"	2"	1.75"	10"	3"	2"	1"-6"	10"	3"	2"	2"	2.25"
8"	3"	2"	2"	1.5"	8"	2"-10"	2"-6"	1"-6"	8"	2"-6"	2"	2"	2.25"
6"	2"	1.5"	2"	1.25"	6"	1"-6"	1"-6"	3"	6"	2"	2"	2"	2.25"



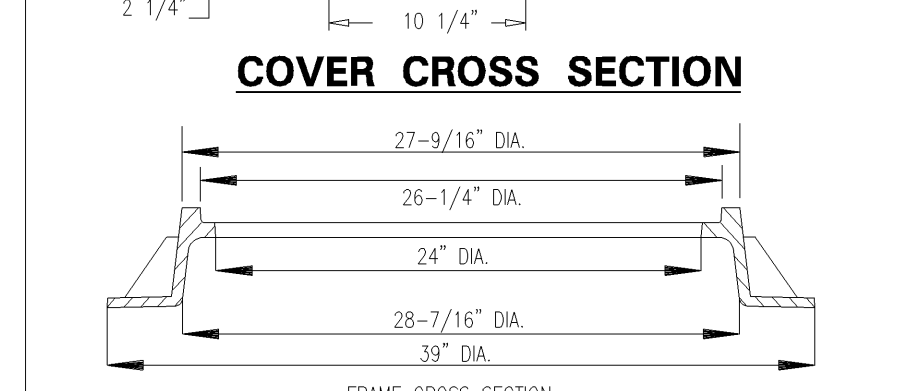
TOP VIEW



BOTTOM VIEW



PICKHOLE DETAIL



COVER CROSS SECTION

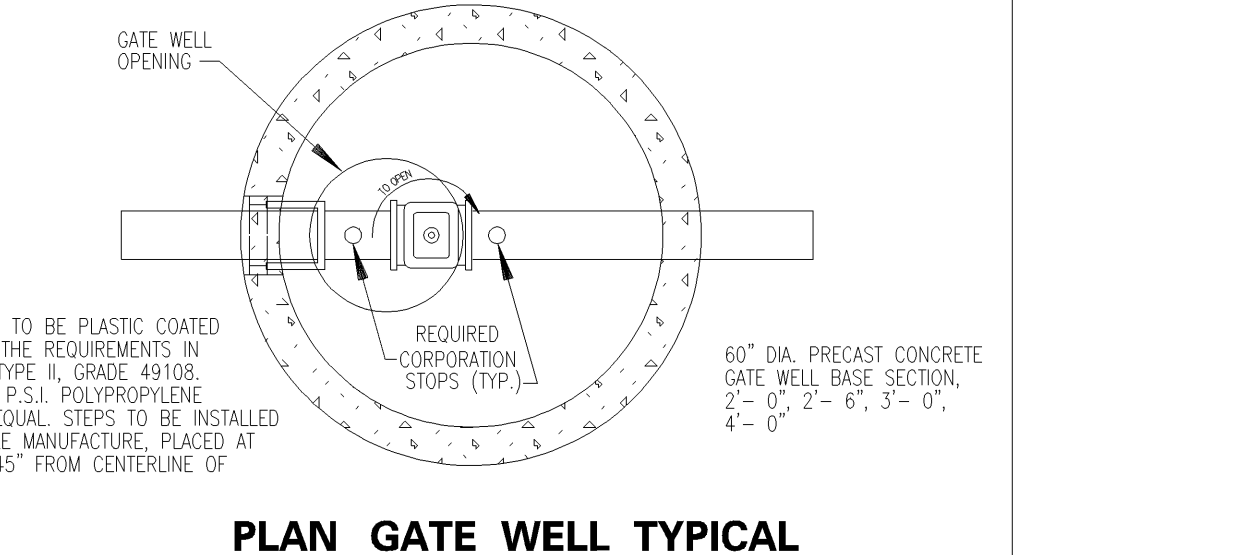
FRAME & COVER

- GENERAL NOTES**
- ALL CONSTRUCTION PROCEDURES AND MATERIALS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP OF BLOOMFIELD.
 - CONTRACTOR MUST CONTACT MISS DIG (1-800-482-7171) THREE WORKING DAYS BEFORE THE START OF CONSTRUCTION FOR UNDERGROUND UTILITY LOCATIONS. ALL UTILITIES SHALL BE STAKED BEFORE CONSTRUCTION STARTS.
 - ALL NECESSARY EASEMENTS FOR WATER MAINS SHALL BE PROVIDED IN THE NAME OF THE OWNER OF THE WATER MAIN PRIOR TO CONSTRUCTION AND ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM FOR OPERATION.
 - ALL WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF FIVE (5) FEET BELOW FINISHED GRADES INCLUDING OPEN DRAINAGE COURSES.
 - ALL TRENCHES UNDER OR WITHIN A 1:1 RATIO OF EXISTING OR PROPOSED PAVEMENT OR DRIVEWAYS SHALL BE BACKFILLED WITH THOROUGHLY COMPACTED CLASS II SAND TO GRADE (95% MAXIMUM UNIT DENSITY).
 - WHERE TWO UTILITIES CROSS, PROVIDE CLASS II BACKFILL MATERIAL IN TWELVE (12) INCH COMPACTED LAYERS TO THE UNDERSIDE OF THE HIGHER UTILITY.
 - WHERE WATER MAINS MUST DIP TO PASS UNDER OTHER UTILITIES, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE KEPT TO A MINIMUM LENGTH AND SHALL BE CONSTRUCTED WITH ELEVEN AND ONE-QUARTER (11-1/4) DEGREE VERTICAL BENDS, PROPERLY ANCHORED.
 - ALL PRECAST CONCRETE GATE WELLS SHALL BE MANUFACTURED TO CONFORM WITH A.S.T.M. C478. STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, EXCEPT WALL THICKNESS SHALL BE AS SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATE WELL SECTIONS SHALL BE "MODIFIED SHOWN TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M. C 443. STANDARD SPECIFICATION FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
 - CONTRACTOR SHALL INSTALL VALVES, TAPPING SLEEVES AND GATE WELL STRUCTURES IN COMPLIANCE WITH MEASUREMENTS (i.e. 2'-0" BETWEEN GATE WELL WALL & CENTERLINE OF OPERATING NUT) TO ALLOW PROPER OPERATION OF VALVE THROUGH GATEWELL OPENING. FAILURE TO DO SO WILL REQUIRE THE CONTRACTOR TO CORRECT AT THEIR EXPENSE.
 - ALL CROSS-CONNECTION CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY AND IN ACCORDANCE WITH THE STANDARDS OF BLOOMFIELD TOWNSHIP, MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF DRINKING WATER AND RADIOLOGICAL PROTECTION.
 - ALL WATER SERVICE CONNECTIONS TWO (2) INCHES AND SMALLER SHALL BE MADE BY THE TOWNSHIP OF BLOOMFIELD OPERATIONS AND MAINTENANCE DIVISION AFTER WATER MAIN ACCEPTANCE AND APPLICABLE TAP PERMITS ARE OBTAINED.
 - ALL FITTINGS AND BENDS SHOULD BE BLOCKED IN ACCORDANCE WITH THRUST BLOCK DETAILS, UNLESS ALTERNATE THRUST RESTRAINT SYSTEM, AS INDICATED IN PLANS AND SPECIFICATIONS, IS APPROVED BY BLOOMFIELD TOWNSHIP.

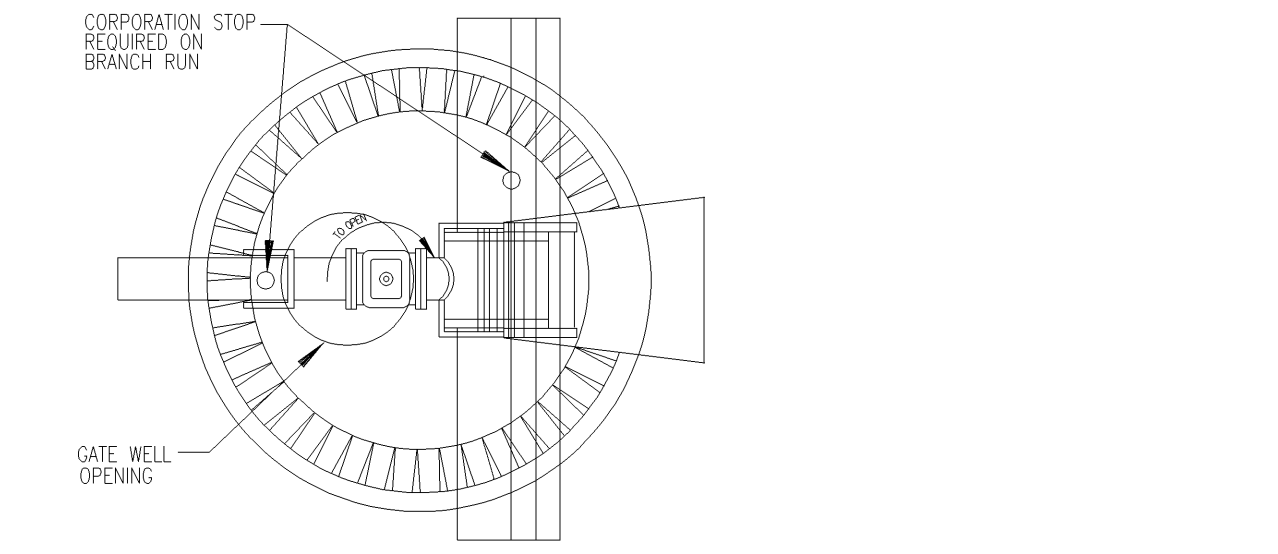
- WATER MAIN MATERIALS NOTES**
- TEMPORARY CONNECTIONS, WHICH MAY BE MADE FOR CHLORINATING AND FLUSHING PURPOSES, SHALL INCLUDE A TESTABLE DOUBLE CHECK VALVE BACKFLOW PREVENTER WITH CURRENT CERTIFICATION.
 - CORPORATION STOPS USED FOR INSERTION INTO MAINS SHALL BE MUELLER TYPE H-15000 OR EQUIVALENT. ALL STOPS SHALL HAVE BRONZE CAST BODIES, KEYS, STEM WASHERS AND NUTS. INLET THREADS SHALL CONFORM TO THE LATEST VERSION OF ANWA C800.
 - ALL DUCTILE IRON PIPE (D.I.P.) WATER MAINS SHALL BE DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE.
 - THE DUCTILE IRON PIPE TO BE FURNISHED AND DELIVERED UNDER THIS SPECIFICATION SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT ANWA C151 (ANSI A21.5), EXCEPT AS OTHERWISE SPECIFIED HEREIN. PIPE SHALL BE DOUBLE CEMENT-LINED AND SEAL COATED WITH AN APPROVED BITUMINOUS SEAL COAT IN ACCORDANCE WITH ANWA C104 (ANSI A21.4).
 - DUCTILE IRON PIPE SHALL BE CLASS 54 FOR SIZES THREE (3) INCH THROUGH TWENTY (20) INCH. SIZE TWENTY-FOUR (24) INCH AND LARGER SHALL BE CLASS 35 DUCTILE IRON PIPE (ABBREVIATED "D.I." IN DETAILS AND ON THIS SHEET).
 - PIPES OF SIZES LARGER THAN TWENTY-FOUR (24) INCHES IN NOMINAL DIAMETER SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT ANWA C100 FOR DUCTILE IRON WATER PIPE.
 - MECHANICAL AND SLIP-ON JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH ANWA C111 (ANSI A21.11).
 - FLANGE JOINTS FOR DUCTILE IRON WATER MAIN SHALL BE IN ACCORDANCE WITH ANWA C110 (ANSI A21.10).
 - FITTINGS FOR DUCTILE IRON PIPE SHALL BE DUCTILE IRON OR CAST IRON AND SHALL MEET REQUIREMENTS OF ANWA C110 (ANSI A21.10) OR ANWA C153 (ANSI A21.5.3). DUCTILE IRON FITTINGS SHALL BE RATED FOR 350 PSI. PIPE SIZES TWENTY-FOUR (24) INCH DIAMETER AND LESS AND 250 PSI FOR PIPE SIZES OVER TWENTY-FOUR (24) INCH DIAMETER, EXCEPT THAT DUCTILE IRON FLANGE FITTINGS SHALL BE RATED FOR 250 PSI FOR ALL PIPE DIAMETERS.
 - ALL BURIED BOLTS, NUTS, AND WASHERS SHALL BE CORTEN OR EQUIVALENT.

- VALVE AND SLEEVE NOTES**
- GATE VALVES, SIZES THREE (3) INCH THROUGH SIXTEEN (16) INCH AND TAPPING VALVES SHALL BE LOCAL MUNICIPAL STANDARD AS DETAILED WITH NON-RISING STEM.
 - ALL IN LINE GATE VALVES THREE (3) INCH AND LARGER SHALL BE IN WELLS AS DETAILED. ALL VALVES SHALL BE RESILIENT SEATED RIGHT TURN OPEN.
 - ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN FIVE (5) FEET BELOW GROUND SURFACE SHALL BE PROVIDED WITH AN EXTENSION STEM. THE LENGTH OF THE EXTENSION STEM SHALL REACH WITHIN FIVE (5) FEET FROM THE GROUND SURFACE. WHEN AN EXTENSION STEM IS USED, IT SHALL BE HELD IN PLACE BY AN EXTENSION STEM GUIDE SUITABLY FASTENED TO THE WALL OF THE GATE WELL. THE EXTENSION STEM SHALL BE MECHANICALLY ATTACHED TO THE OPERATING NUT. DETAILS OF THE EXTENSION SYSTEM AND THE METHOD OF INSTALLATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
 - BUTTERFLY VALVES MAY BE USED FOR VALVES GREATER THAN 16-INCH DIAMETER AND SHALL BE MODEL 2F11 AS MANUFACTURED BY HENRY PRATT COMPANY OR APPROVED EQUAL.
 - TAPPING VALVES SHALL BE SERIES A AS MANUFACTURED BY EAST JORDAN IRON WORKS OR RESILIENT SEATED GATE VALVES AS APPROVED BY BLOOMFIELD TOWNSHIP.
 - TAPPING SLEEVES SHALL BE C.I.M INDUSTRIES, TYPE 432; EAST JORDAN IRON WORKS, TYPE MJ OR APPROVED EQUAL.
 - WHEN THE PROPOSED TAP IS SAME SIZE AS EXISTING WATER MAIN A CUT IN TEE SHALL BE USED. A MINIMUM 48 HRS NOTICE SHALL BE GIVEN TO TOWNSHIP WATER DEPARTMENT FOR ANY SHUTDOWNS OF THE SYSTEM.

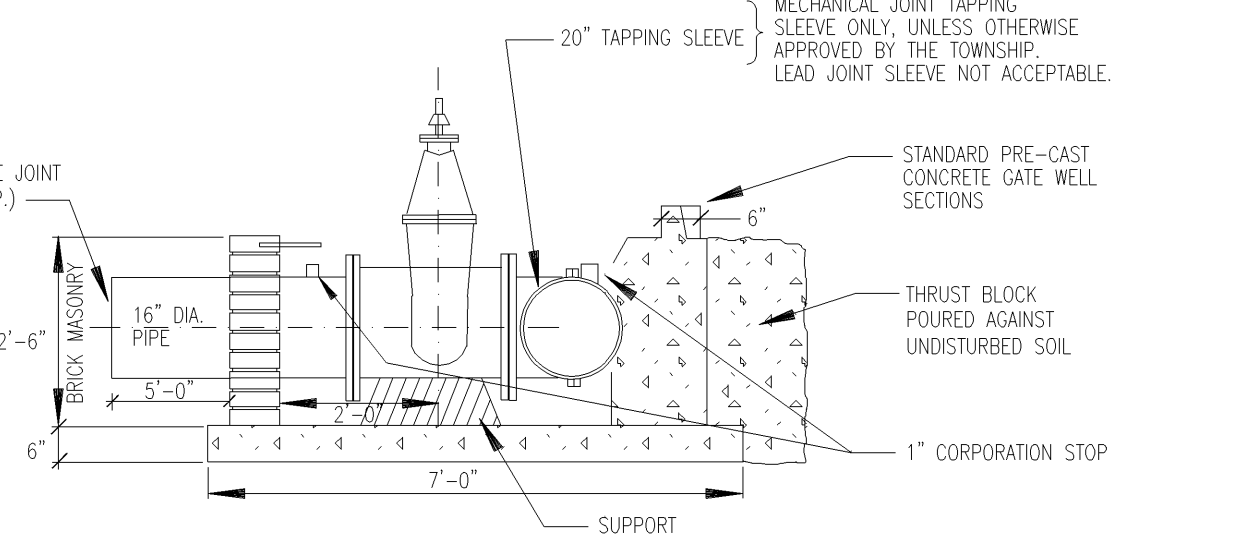
- HYDRANT REQUIREMENTS**
- ALL HYDRANTS SHALL BE CONSTRUCTED WITH A SIX (6) INCH COMPANION GATE VALVE IN A THREE (3) PIECE, ADJUSTABLE DUCTILE IRON VALVE BOX, WHICH SHALL INCLUDE A FIVE AND ONE-QUARTER (5-1/4) INCH SCREW SHAFT. VALVE BOXES SHALL BE SERIES 6860 AS MANUFACTURED BY TYLER PIPE OR APPROVED EQUAL.
 - ALL HYDRANTS SHALL BE WATEROUS PACE MODEL #BB-67 OR EAST JORDAN IRON WORKS NO. 5-BR- TRAFFIC MODEL OR MUELLER-A24015 SELF-DRAINING HYDRANTS SHALL NOT BE USED. ALL HYDRANTS SHALL BE LOCAL TOWNSHIP STANDARD AS DETAILED. HYDRANTS SHALL HAVE BREAKAWAY FLANGE.
 - ALL HYDRANTS SHALL BE PAINTED RED ABOVE GROUND AND BLACK BELOW GROUND WITH A FINISH COAT OF GARDOLITEK 501 ENAMEL. COLOR 314 VERMILION OR APPROVED EQUAL. HYDRANT CAP SHALL BE PAINTED SAME COLOR AS THE HYDRANT.
 - ALL FIRE HYDRANT JOINTS SHALL BE TOTALLY RESTRAINED BY THE USE OF NEG-A-LUKS OR EQUIVALENT. THRUST BLOCKS ARE ALSO REQUIRED UNLESS DIRECTED OTHERWISE BY BLOOMFIELD TOWNSHIP.



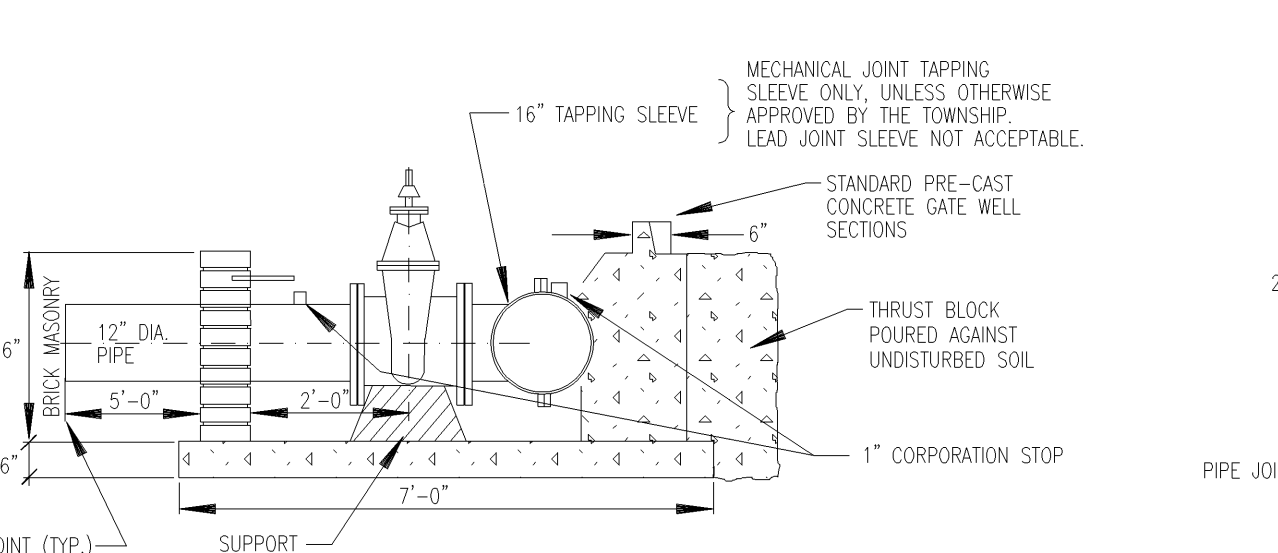
PLAN GATE WELL TYPICAL



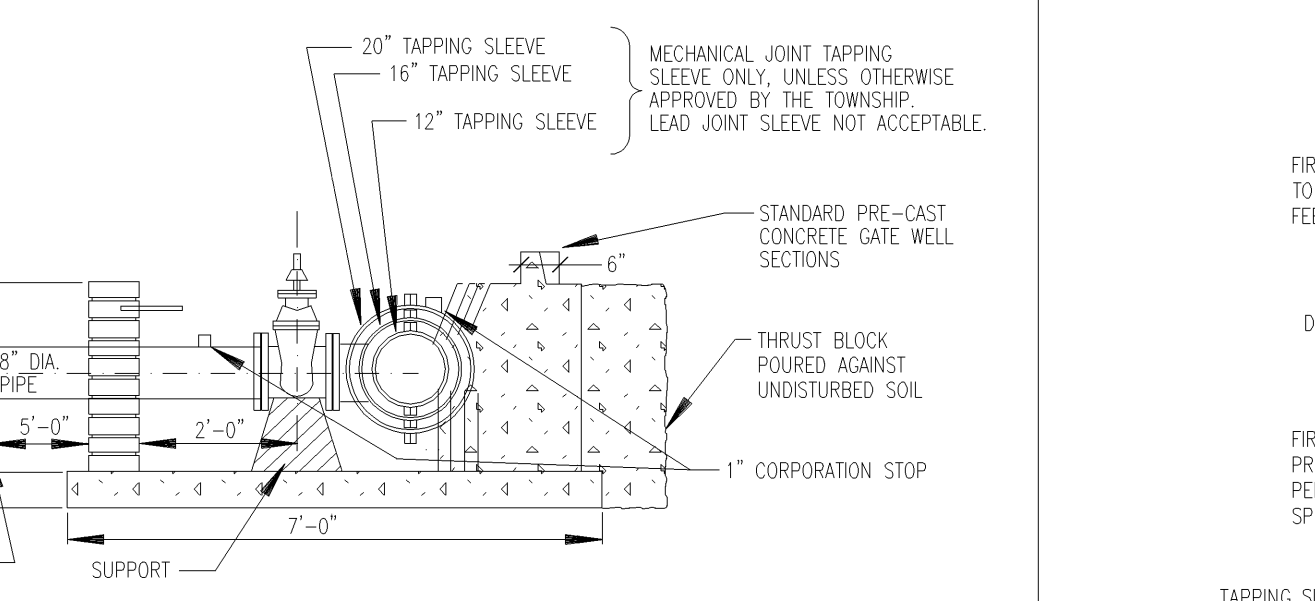
PLAN TAPPING SLEEVE VALVE AND WELL (TYPICAL)



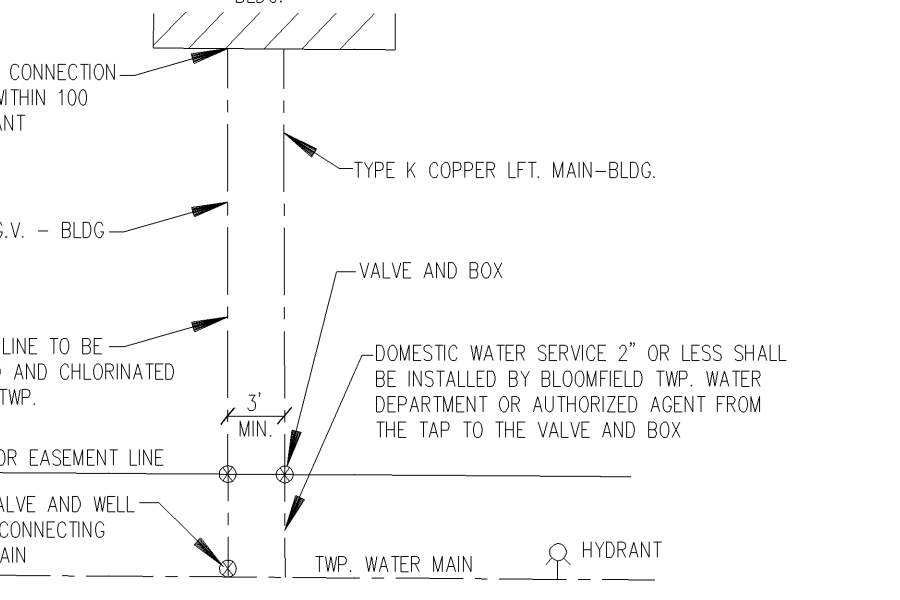
20" x 16" TAPPING SLEEVE, VALVE AND WELL



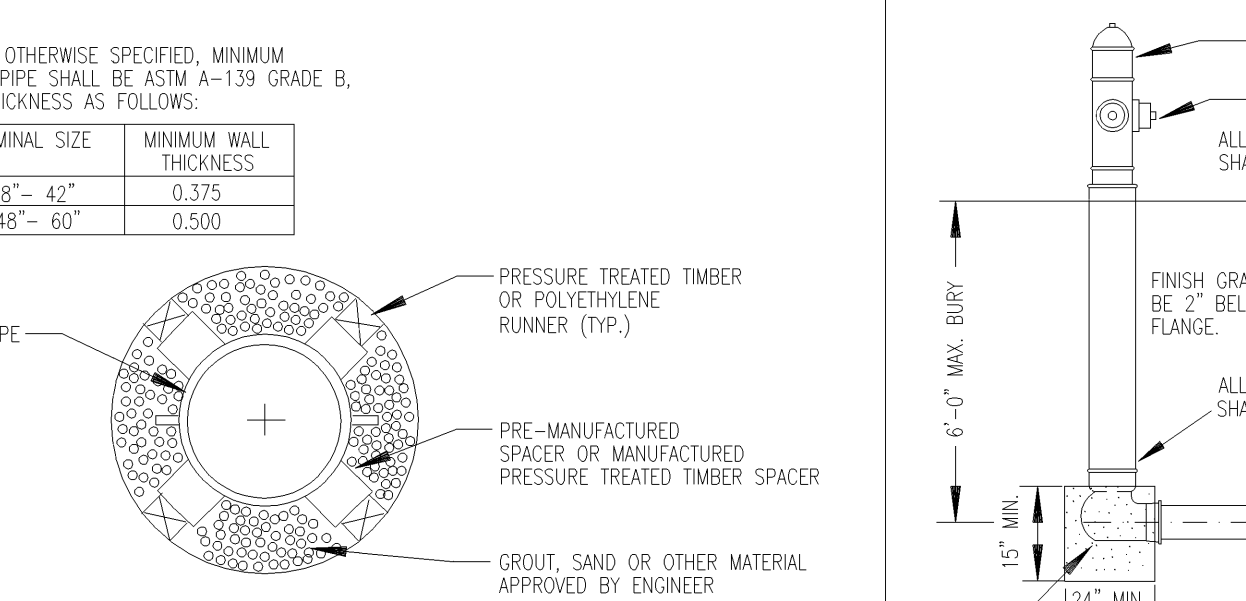
16" x 12" TAPPING SLEEVE, VALVE AND WELL



20" x 8", 16" x 8", 12" x 8" TAPPING SLEEVE, VALVE AND WELL

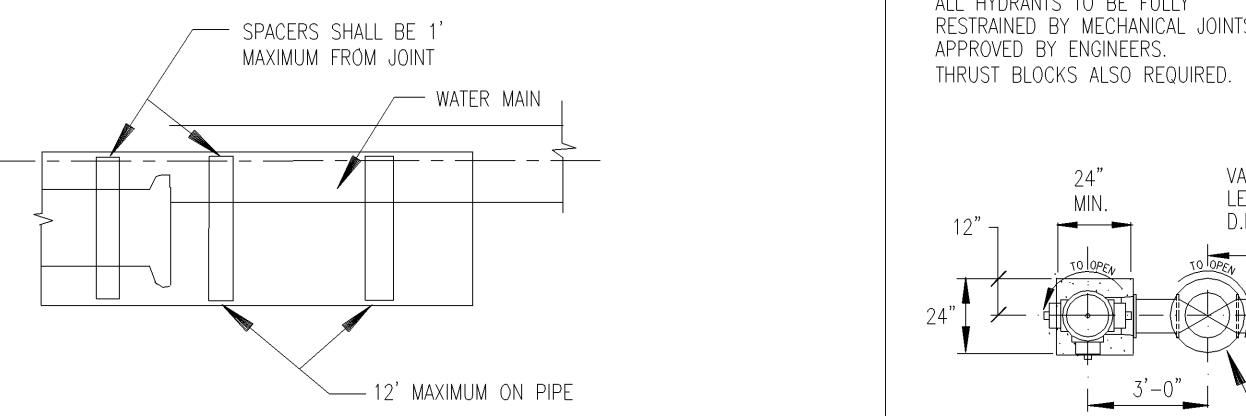


PRIVATE FIRE PROTECTION AND DOMESTIC WATER SUPPLY DETAIL



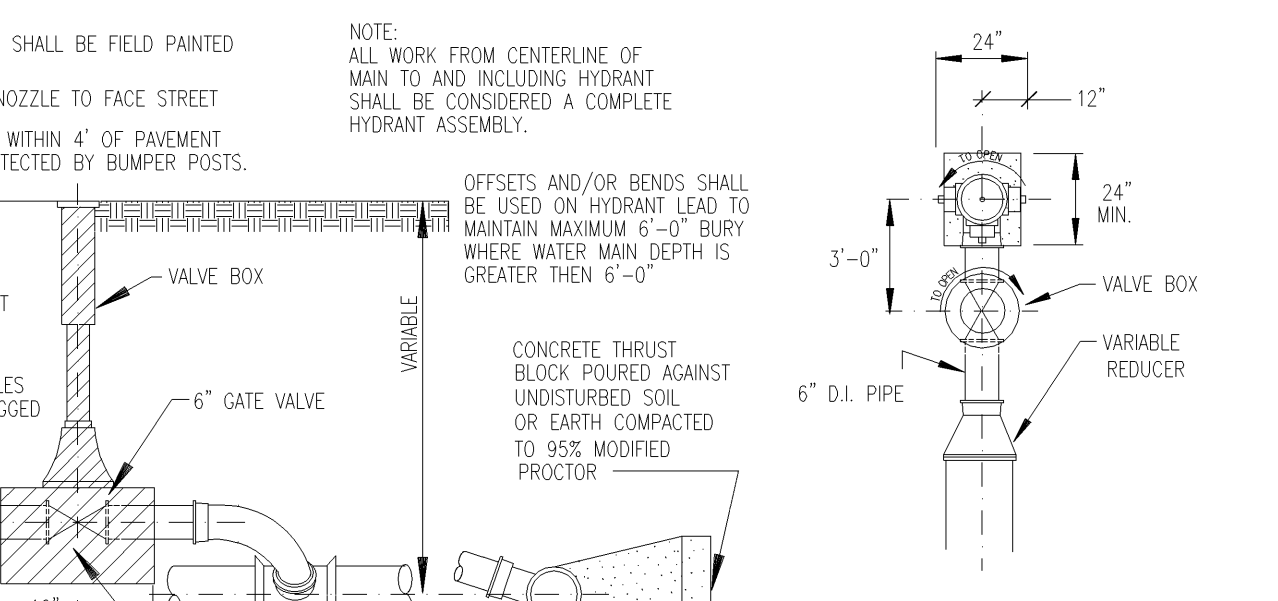
SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE

NOMINAL SIZE	MINIMUM WALL THICKNESS
8" - 42"	0.375
48" - 60"	0.500

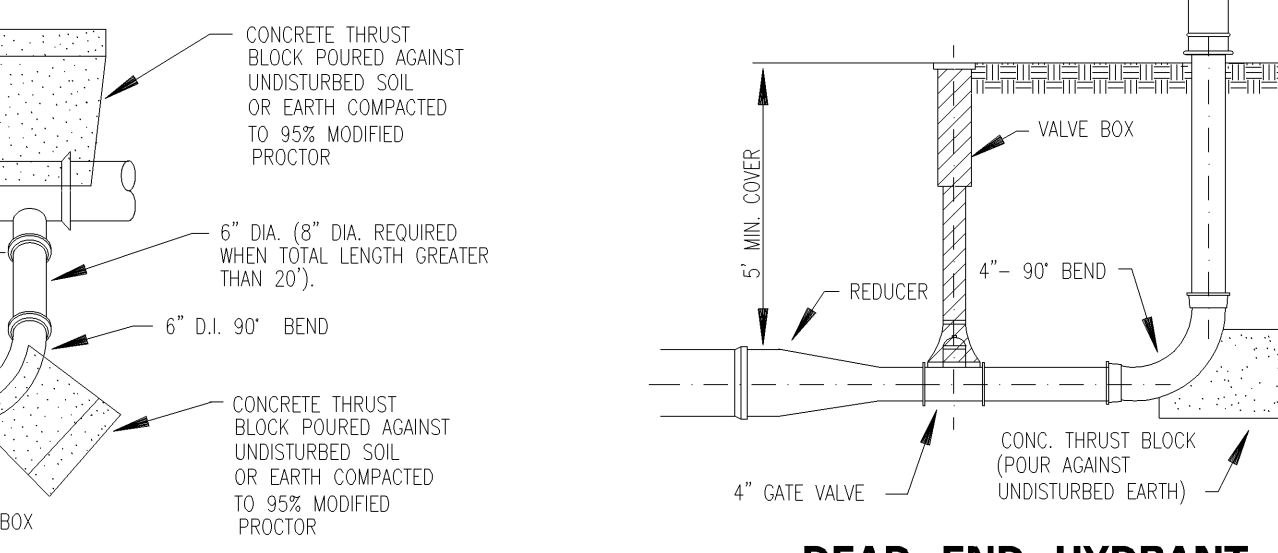


WATER MAIN IN CASING SECTION

WATER MAIN IN CASING DETAILS

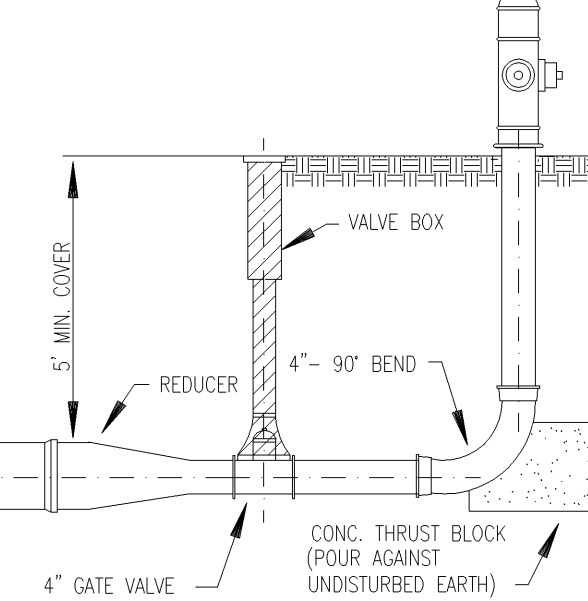


SECTION 6" HYDRANT SIDE OUTLET



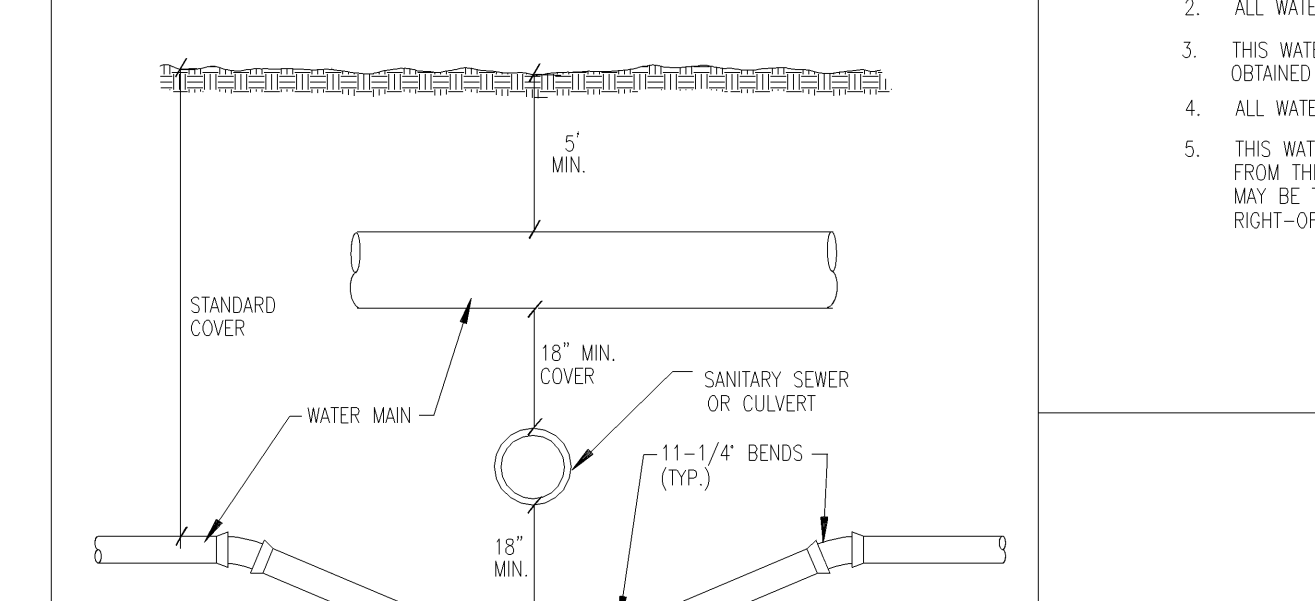
PLAN 6" HYDRANT SIDE OUTLET

PLAN 6" HYDRANT WATER MAIN END

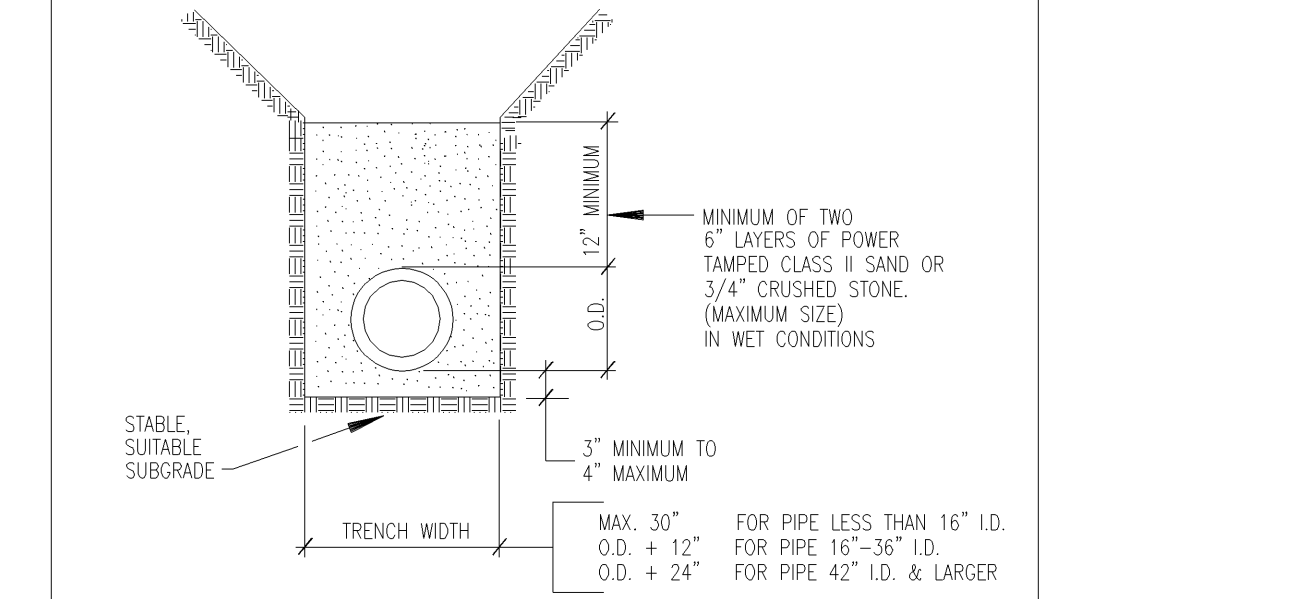


DEAD END HYDRANT

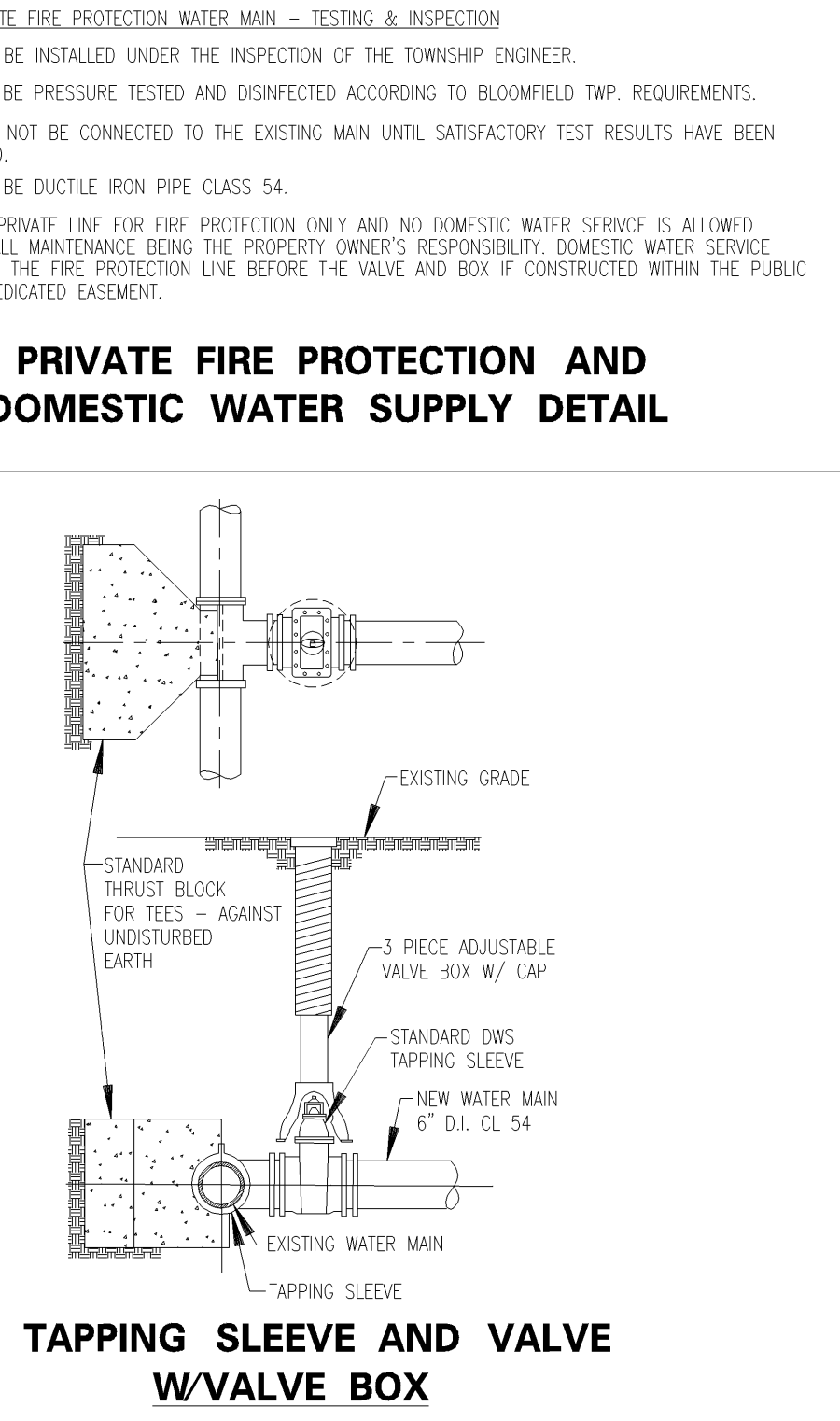
HYDRANT DETAILS



SEWER OR CULVERT CROSSING



STANDARD BEDDING FOR WATER MAIN



TAPPING SLEEVE AND VALVE W/VALVE BOX

WATER MAIN STANDARD DETAILS AND NOTES

NO.	BY:	DATE:	REVISION DESCRIPTION:
01		02-16-2005	UPDATED DETAIL SHEET
02		08-09-2005	UPDATED PER BTEES
03		11-22-2005	UPDATED PER BTEES

BLOOMFIELD TOWNSHIP ENGINEERING & ENVIRONMENTAL SERVICES
 4200 TELEGRAPH ROAD
 24 BOX 489
 BLOOMFIELD HILLS, MI 48303-0489

DATE	DATE	SHEET NO.:
02/16/05	02/16/05	OF
CHECKED	PROJECT MANAGER	SCALE
NO SCALE		