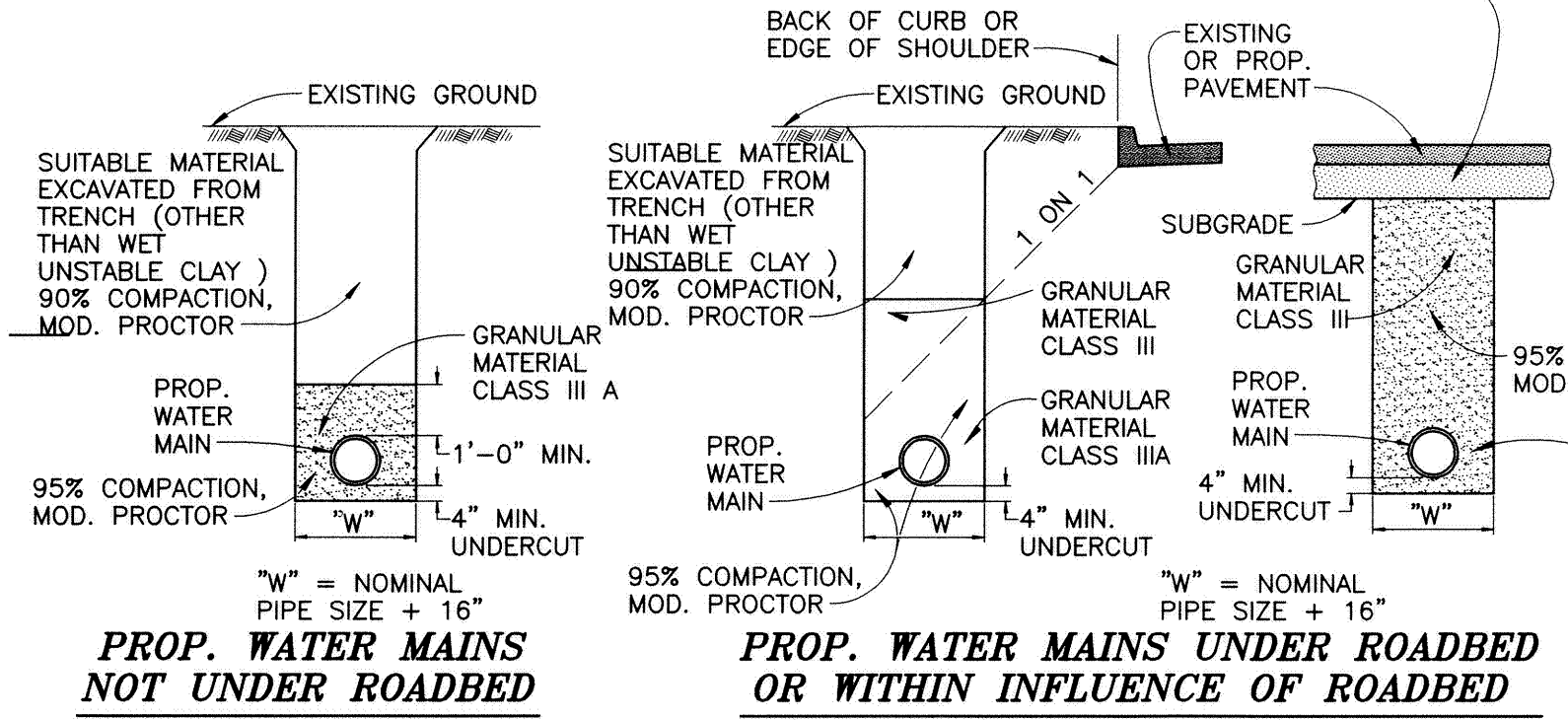
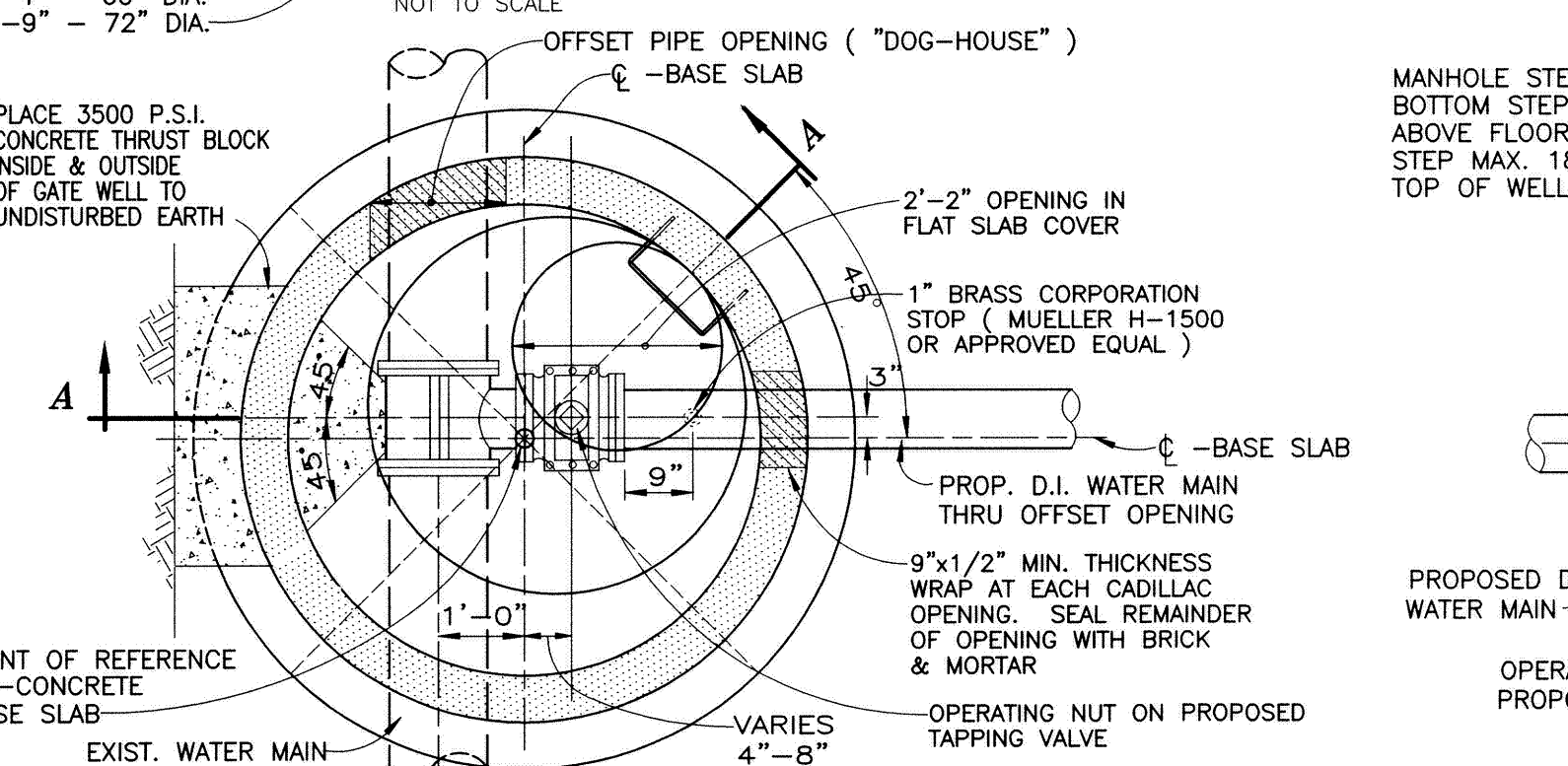
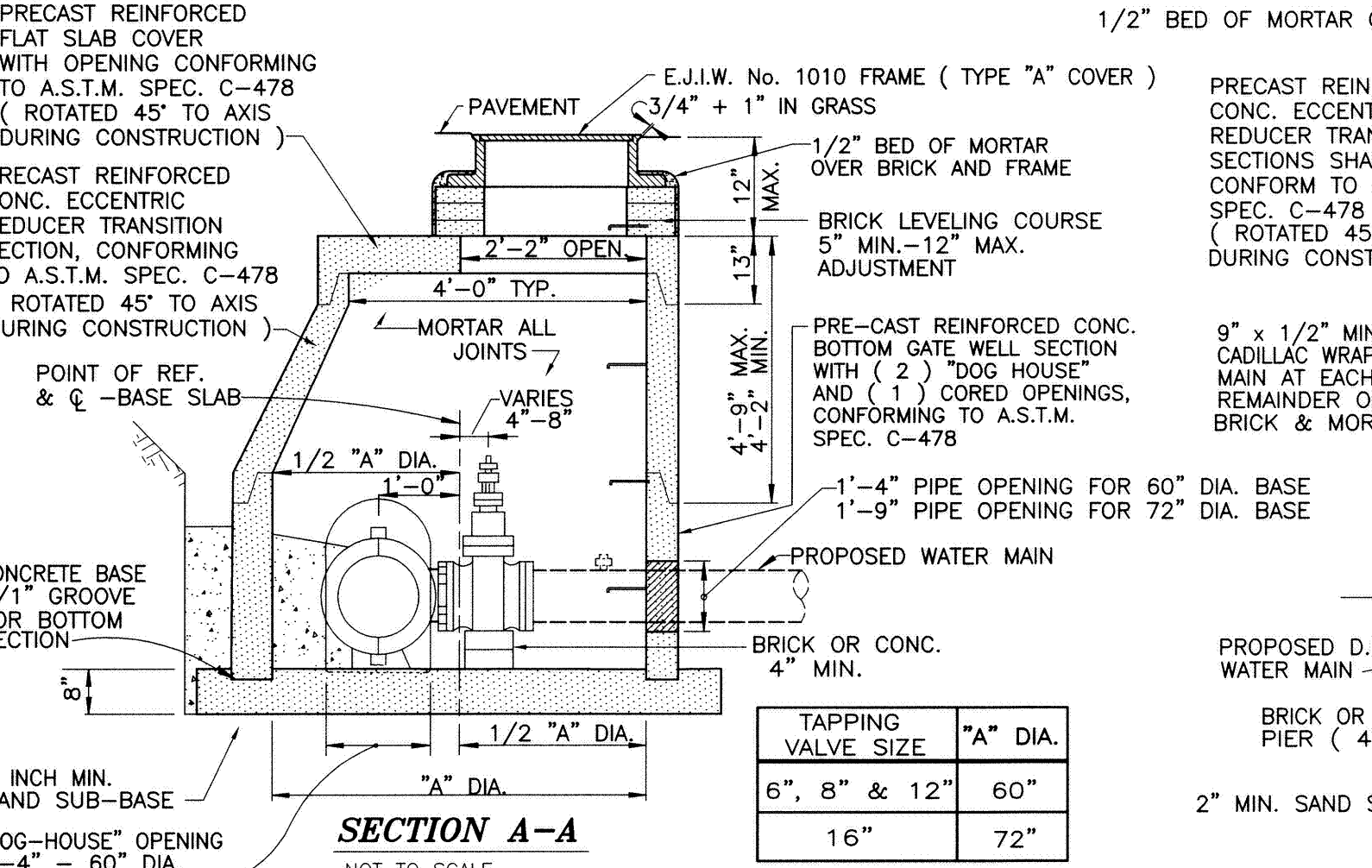


VERTICAL BEND		DIMENSION-INCHES								
DIAM.	ANGLE	A	B	C	D	E	F	G	H	I
8"	22 1/2°	36	20	16	16	19	32	8"	21"	12"
8"	45°	48	30	18	18	20	38	10"	24"	12"
12"	22 1/2°	48	30	18	18	24	48	10"	30"	12"
12"	45°	54	36	18	18	28	60	11"	30"	12"
16"	22 1/2°	54	34	20	19	26	60	11"	28"	18"

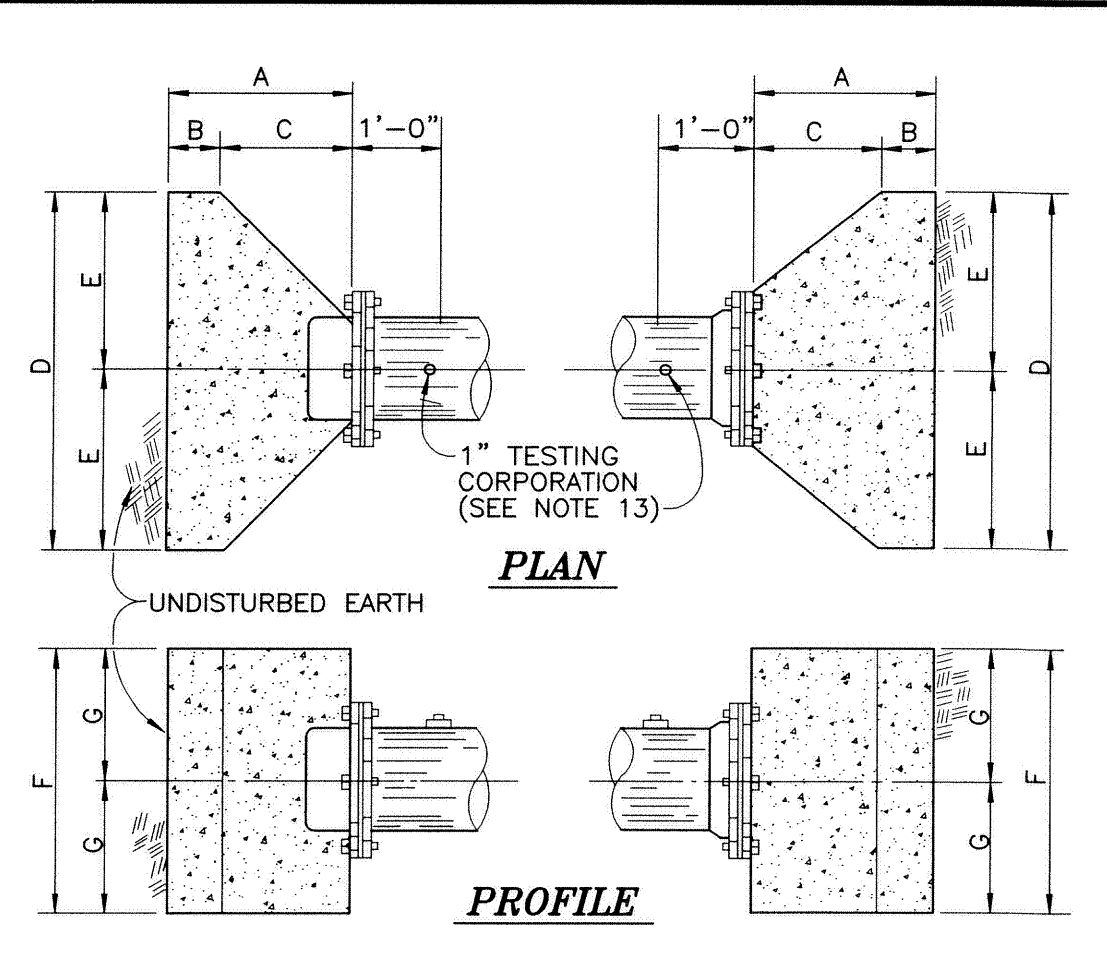
ANCHORAGE FOR VERTICAL BENDS



BEDDING AND TRENCH DETAILS

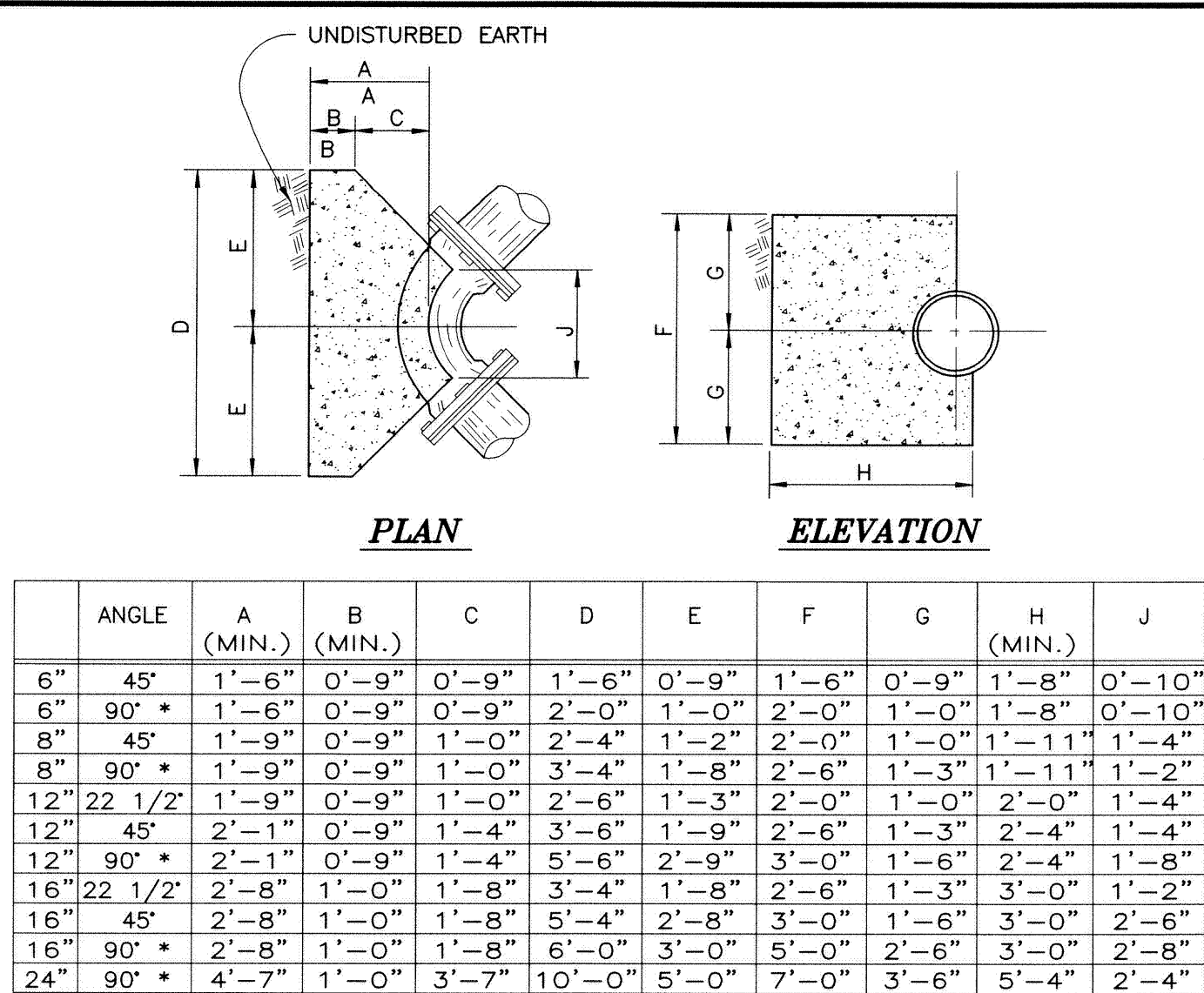


PLAN OF GATE VALVE IN FLAT SLAB COVER WELL



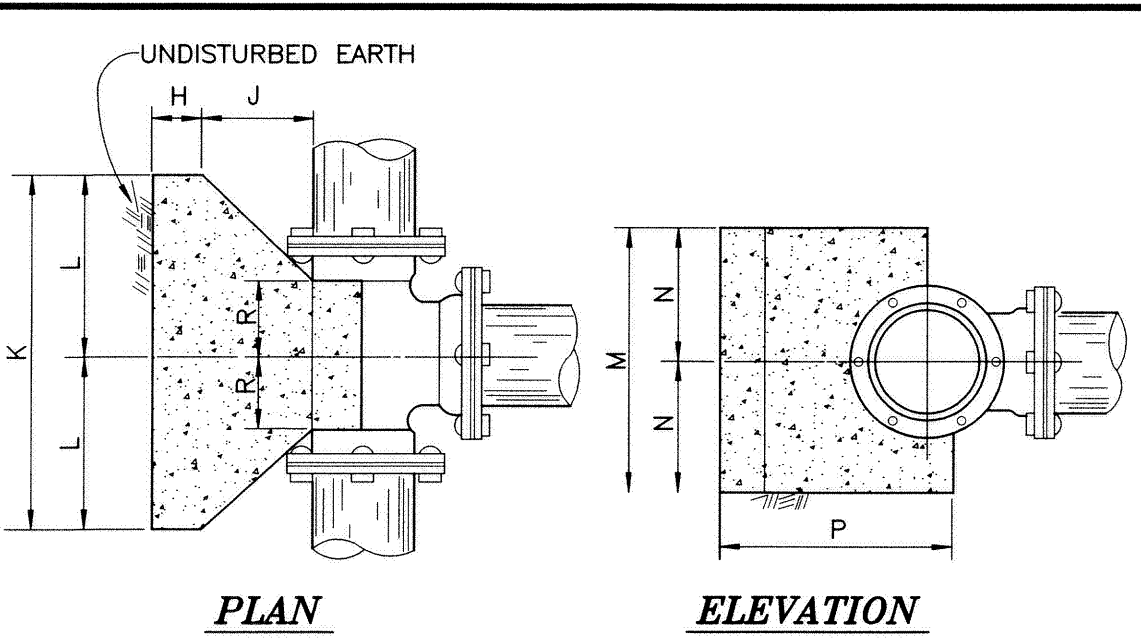
SIZE	A MIN.	B MIN.	C	D	E	F	G
8"	1'-11"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"
12"	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"
16"	2'-8"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"
24"	4'-2"	1'-6"	2'-8"	6'-0"	3'-0"	4'-0"	2'-0"

CONCRETE THRUST BLOCKS FOR CAPS



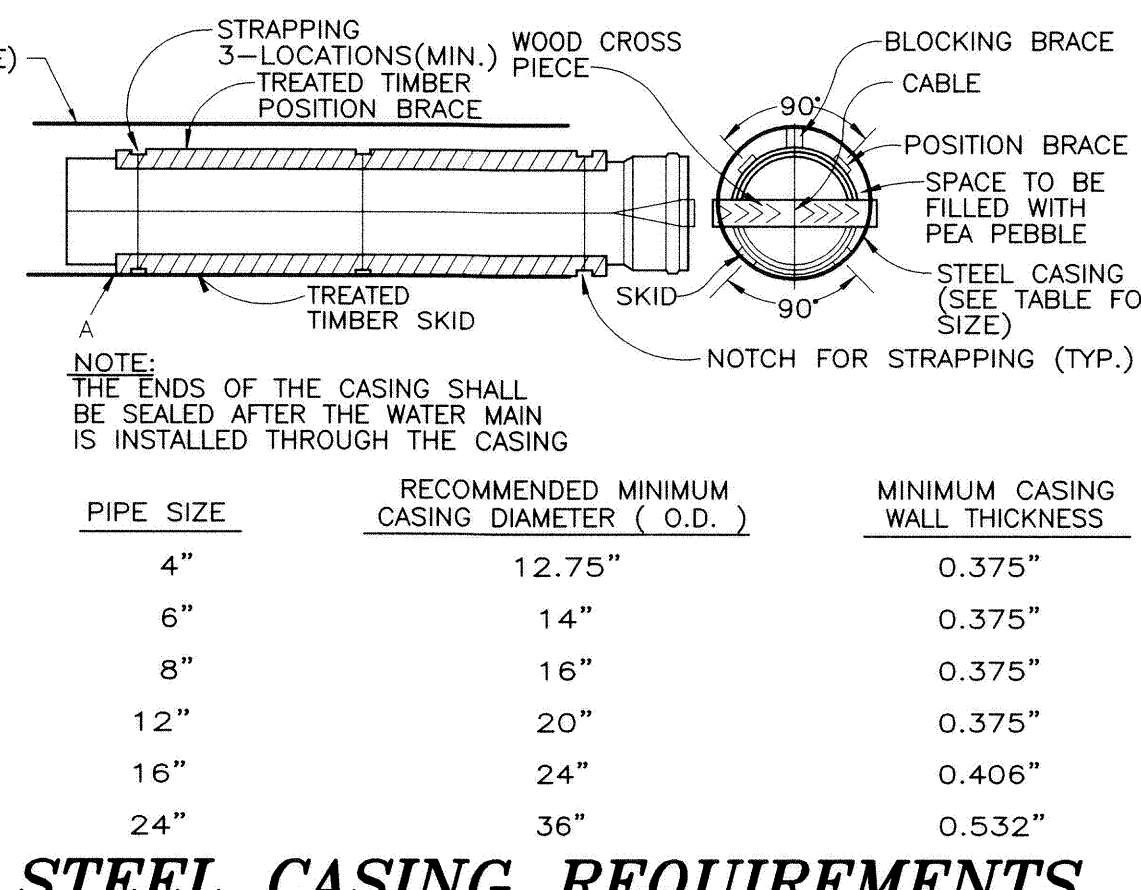
ANGLE	A (MIN.)	B (MIN.)	C	D	E	F	G	H (MIN.)	J
6"	45°	1'-6"	0'-9"	0'-9"	1'-6"	0'-9"	1'-6"	0'-9"	0'-10"
6"	90°	1'-6"	0'-9"	0'-9"	2'-0"	1'-0"	2'-0"	1'-0"	0'-10"
8"	45°	1'-9"	0'-9"	1'-0"	2'-4"	1'-2"	2'-0"	1'-0"	1'-11"
8"	90°	1'-9"	0'-9"	1'-0"	3'-4"	1'-8"	2'-6"	1'-3"	1'-11"
12"	22 1/2°	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	2'-6"	1'-0"	1'-4"
12"	45°	2'-1"	0'-9"	1'-4"	3'-6"	1'-9"	2'-0"	1'-3"	1'-4"
12"	90°	2'-1"	0'-9"	1'-4"	5'-6"	2'-9"	3'-0"	1'-6"	2'-4"
16"	22 1/2°	2'-8"	1'-0"	1'-8"	3'-4"	1'-8"	2'-6"	1'-3"	3'-0"
16"	45°	2'-8"	1'-0"	1'-8"	5'-4"	2'-8"	3'-0"	1'-6"	3'-0"
16"	90°	2'-8"	1'-0"	1'-8"	6'-0"	3'-0"	5'-0"	2'-6"	3'-0"
24"	90°	4'-7"	1'-0"	3'-7"	10'-0"	5'-0"	7'-0"	3'-6"	5'-4"

CONCRETE THRUST BLOCKS FOR HORIZONTAL BENDS

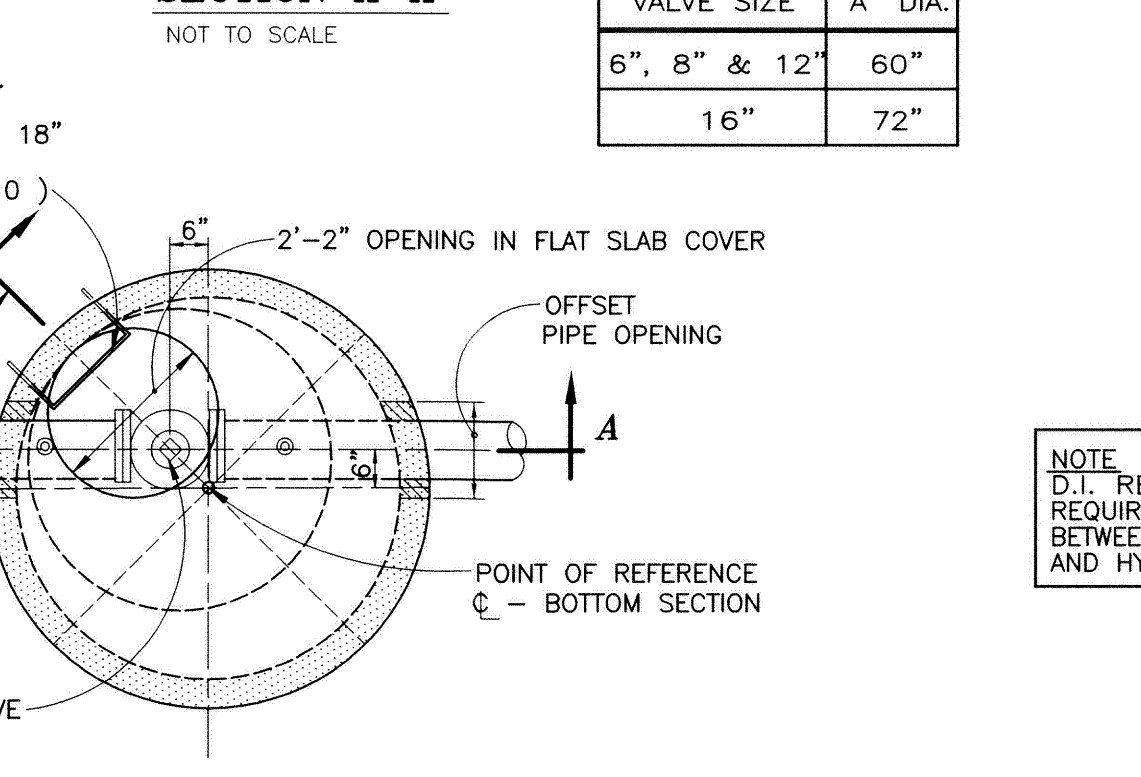
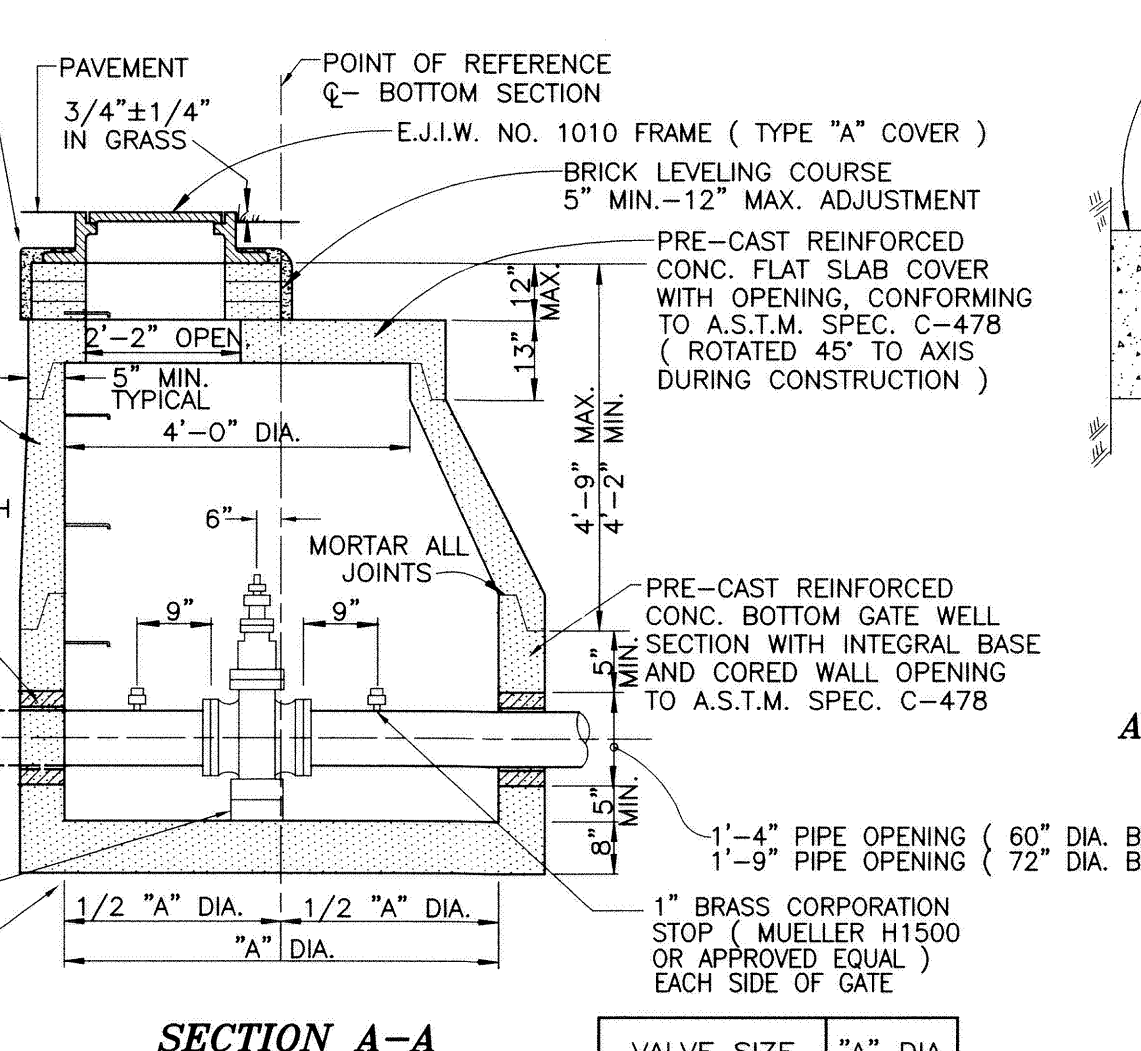


CODE	SCHEDULE OF THRUST BLOCK DIMENSIONS			
	TEE SIZE	8"x8"	12"x12"	16"x16"
H	0'-9"	0'-9"	1'-0"	
J	0'-9"	1'-3"	1'-4"	
K	2'-8"	4'-0"	4'-8"	
L	1'-4"	2'-0"	2'-4"	
M	2'-0"	3'-0"	4'-8"	
N	1'-0"	1'-6"	2'-4"	
P	8"	2'-2"	2'-10"	
R	12"	2'-10"	3'-4"	3'-6"
	8"	0'-7"		
	12"	0'-8"	0'-10"	
	16"	0'-8"	0'-10"	1'-0"

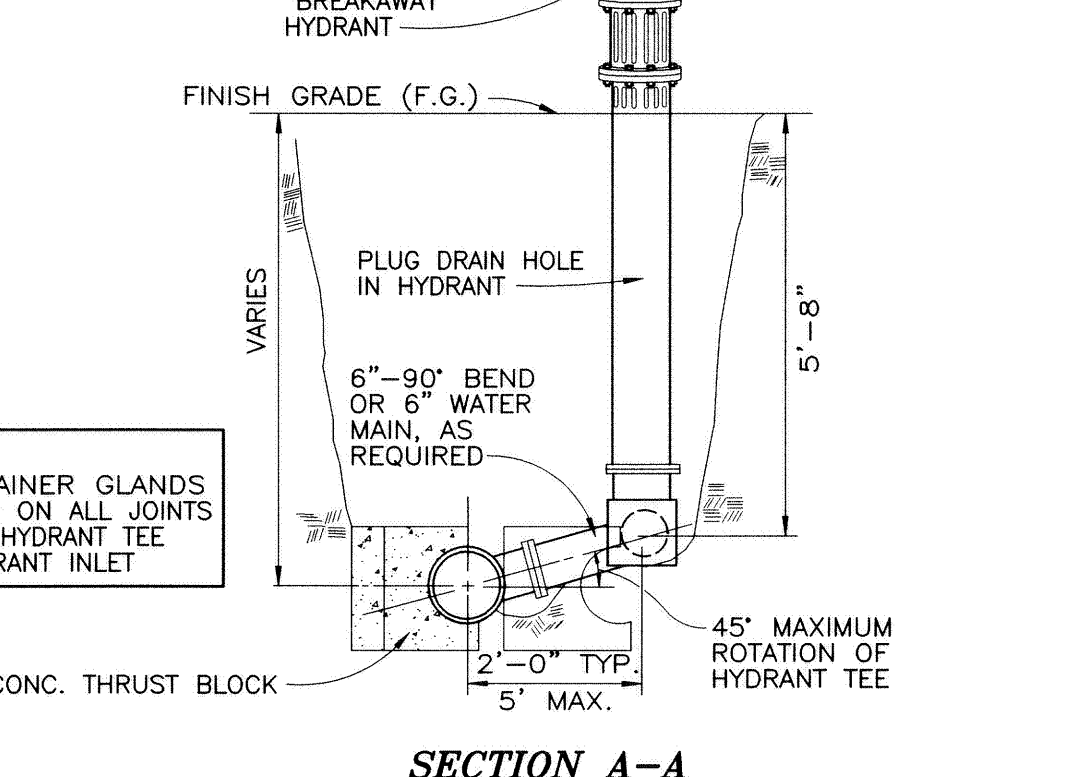
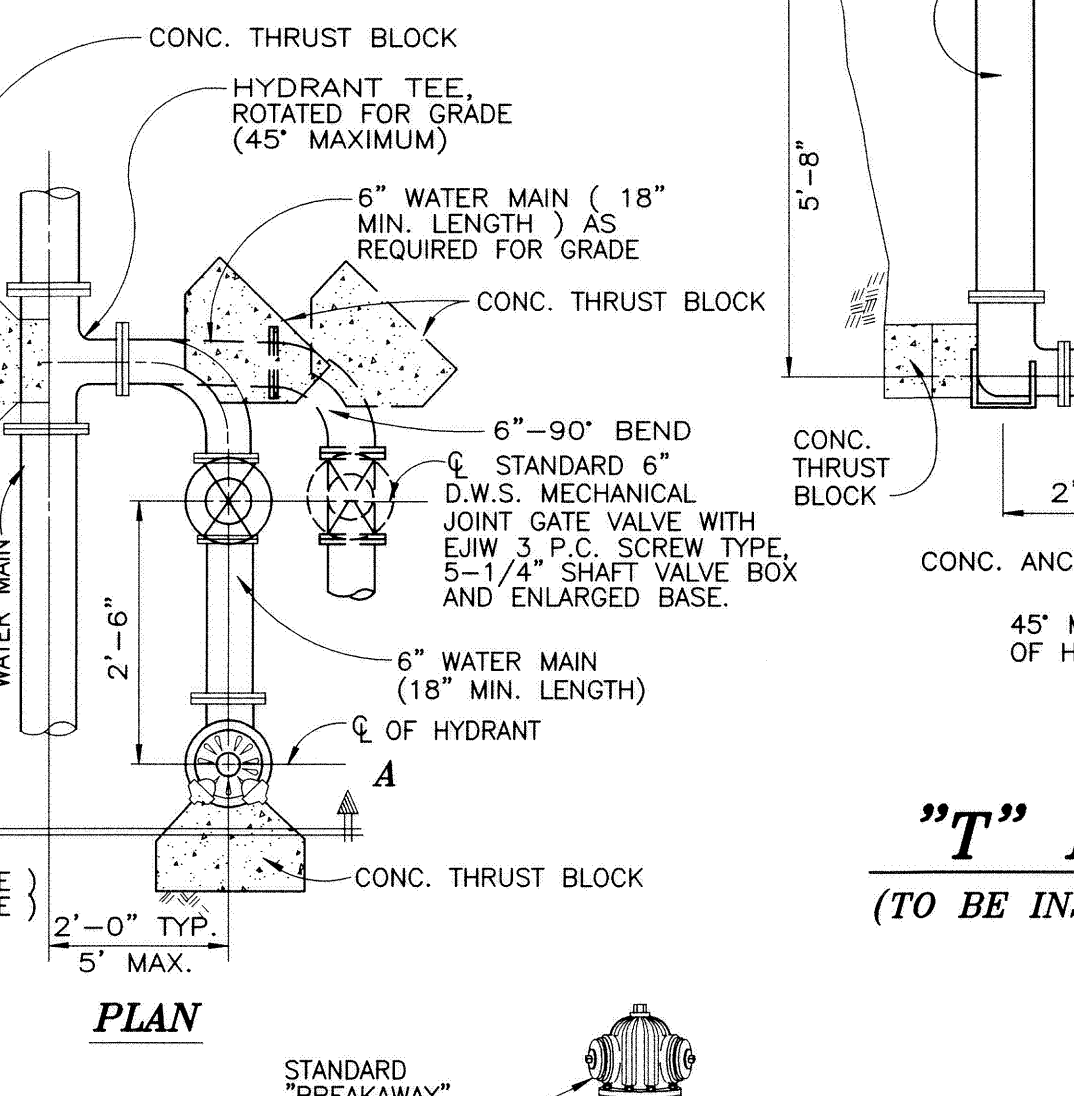
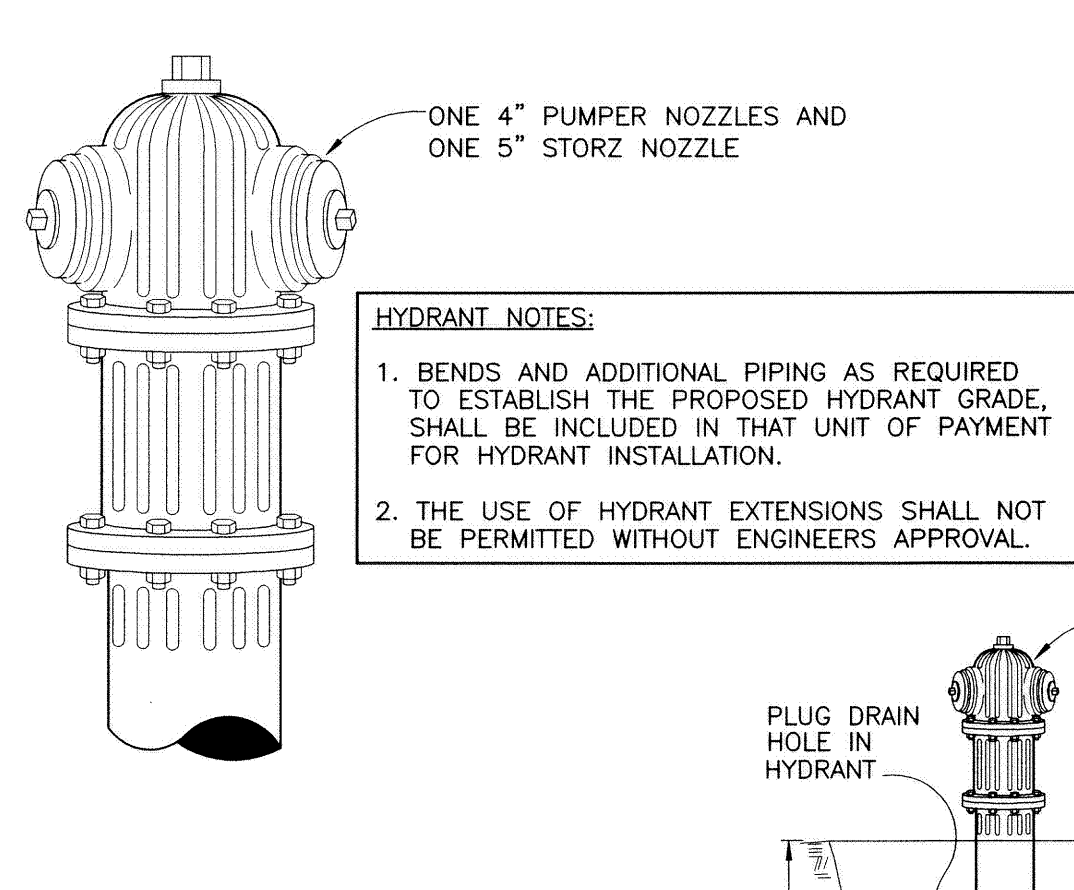
CONCRETE THRUST BLOCKS FOR TEES



STEEL CASING REQUIREMENTS



PLAN OF GATE VALVE IN FLAT SLAB COVER WELL



"L" HYDRANT CONNECTION

GENERAL NOTES

- ALL WATER MAIN AND WATER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROSEVILLE SEWER AND WATER DEPARTMENT AND THE DETROIT WATER & SEWERAGE DEPARTMENT.
- THE CONTRACTOR SHALL ARRANGE FOR A PRECONSTRUCTION MEETING WITH THE SEWER AND WATER DEPARTMENT, VARIOUS UTILITY COMPANIES AND GOVERNMENTAL AGENCIES MUST BE NOTIFIED OF THE MEETING BY THE CONTRACTOR. (3 WORKING DAY NOTICE REQUIRED).
THE CONTRACTOR SHALL NOTIFY MISS DIG, THE CITY OF ROSEVILLE WATER DEPARTMENT (INSPECTOR DETROIT WATER AND SEWERAGE DEPARTMENT (INSPECTION DIVISION) AT 833-4682 AND ANDERSON, ECKSTEIN AND WESTRICK, INC. AT 726-1234 THREE WORKING DAYS PRIOR TO CONSTRUCTION.
- DUCTILE IRON PIPE SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C151/A21.5 FOR CLASS 54, DOUBLE CEMENT LINED WITH PUSH ON TYPE JOINTS. PUSH ON JOINTS SHALL BE TYTON, SUPER BELLITE OR APPROVED EQUAL WITH SERRATED BRASS WEDGES. 6" THRU 12" PIPE REQUIRES 2 WEDGES PER JOINT, 16" AND LARGER REQUIRES 4 WEDGES PER JOINT.
- ALL HYDRANTS SHALL BE CITY OF ROSEVILLE STANDARD EAST JORDAN IRON WORKS MODEL 5BR250 WITH A BREAKAWAY FLANGE. HYDRANTS SHALL OPEN COUNTER-CLOCKWISE AND BE SUPPLIED WITH 1-FOUR INCH PUMPER NOZZLE AND 1-FIVE INCH STORZ NOZZLE. HYDRANT TO HAVE 5-1/2 FT. OF BURY WITH A GROUND CLEARANCE FROM CENTER OF PUMPER NOZZLE TO GROUND OF AT LEAST 18 INCHES.
- UNLESS OTHERWISE SHOWN ON THE PLANS HYDRANTS SHALL BE TYPE "L" INSTALLATION AND SHALL BE SET TO THE PROPOSED PLAN GRADE ELEVATION OR THE EXISTING GROUND ELEVATION.
- GATE VALVES SHALL BE EIJJ RW C-515 TURN CLOCKWISE TO OPEN, WITH MECHANICAL JOINTS.
- GATE VALVES AND TAPPING VALVES SHALL BE HOUSED WITHIN A PRECAST CONCRETE GATEWELL AS SHOWN IN THE DETAIL THIS SHEET. HYDRANT VALVES SHALL BE HOUSED IN A 3-PIECE SCREW TYPE BOX (5-1/4" SHAFT) WITH AN ENLARGED BASE.
- ALL FITTINGS SHALL BE DUCTILE IRON IN ACCORDANCE WITH ANSI/AWWA C153/A21.53 (COMPACT FITTINGS), 350 PSI PRESSURE RATING WITH DOUBLE CEMENT LINING, MECHANICAL JOINTS AND RETAINING GLANDS, MECHANICAL JOINT "T" BOLTS SHALL BE "CORBLUE" TYPE STEEL (OR EQUAL). SPLIT RETAINERS ARE NOT ALLOWED.
- CONCRETE THRUST BLOCKS AND D.I. RETAINER GLANDS ARE REQUIRED AT ALL BENDS, TEES, CAPS OR PLUGS. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 2500 PSI (MIN.) AT 28 DAYS.
- STEPS ARE TO BE E.J.I.W. NO. 8503, MA INDUSTRIES P.S.I. POLYPROPYLENE OR APPROVED EQUAL AND FACTORY INSTALLED BY THE GATEWELL MANUFACTURER.
- THE WATER MAIN SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 5.0 FEET, MEASURED FROM THE PAVED CENTERLINE ELEVATION OR THE EXISTING GROUND, WHICHEVER IS LOWER. GENERALLY, THE MAXIMUM DEPTH OF COVER SHALL NOT EXCEED 7 FEET.
- A VERTICAL CLEARANCE OF 1.5 FEET (MIN.) MUST BE MAINTAINED BETWEEN THE WATER MAIN AND ANY UTILITIES. ADJUSTMENTS TO THE WATER MAIN DEPTH IN ORDER TO OBTAIN THE DESIRED CLEARANCES MUST BE ACCOMPLISHED WITH VERTICAL BENDS, THRUST BLOCKS AND ANCHORAGES, AND SHALL BE INCLUDED IN THE UNIT OF PAYMENT FOR WATER MAIN INSTALLATION.
- DEFLECTION OF PIPE JOINTS TO OBTAIN THE DESIRED CLEARANCES OR ALIGNMENT SHALL ONLY BE ACCOMPLISHED WITH THE OWNER'S APPROVAL. THE MAXIMUM ALLOWABLE DEFLECTION IS 14 INCHES FOR 4" THRU 12" PIPE AND 8" FOR 16" AND 24" PIPE.
- THE MAXIMUM PERMISSIBLE LEAKAGE, DURING HYDROSTATIC TESTING, SHALL NOT EXCEED 0.18 GAL. PER INCH DIAMETER OF MAIN PER 1000 FEET OF PIPE IN 2 HOURS AT A TEST PRESSURE OF 150 PSI. THE MAXIMUM TEST LENGTH IS 3000 FEET. THE OWNER RESERVES THE RIGHT TO TEST SHORTER LENGTHS. THE CONTRACTOR IS TO SUPPLY ALL TESTING EQUIPMENT AND PERFORM THE TEST. THE DETROIT WATER AND SEWERAGE DEPARTMENT WILL WITNESS THE TEST.
- CONNECTIONS TO THE EXISTING WATER SYSTEM SHALL NOT BE MADE UNTIL THE NEW MAIN HAS BEEN SUCCESSFULLY PRESSURE TESTED AND DISINFECTED IN ACCORDANCE WITH THE CITY OF ROSEVILLE AND DETROIT WATER & SEWERAGE DEPARTMENT STANDARDS AND A COPY OF BOTH RESULTS ARE SUBMITTED TO THE ROSEVILLE WATER DEPARTMENT.
- WITH THE APPROVAL OF THE DIRECTOR OF THE SEWER AND WATER DEPARTMENT, THE BEDDING MATERIAL MAY BE MODIFIED. DEPENDING ON EXISTING GROUND CONDITIONS, ANY OR ALL OF THE BEDDING MATERIAL MAY BE CHANGED TO EXCAVATED MATERIAL. ALL DECISIONS WILL BE MADE BY THE DIRECTOR, IN THE FIELD AT THE TIME OF CONSTRUCTION, AND SAID DECISION MAY BE REVERSED AT ANY TIME THROUGHOUT THE JOB, IF EXISTING CONDITIONS AND / OR CONSTRUCTION METHODS WARRANT.

CITY OF ROSEVILLE STANDARD WATER MAIN DETAILS

SEWER AND WATER DEPARTMENT

APPROVED BY: *Brian D. McGrail* BRIAN D. McGRAIL, DIRECTOR DATE: MARCH 6, 2008

PROJECT NO. SHEET NO. DATE: MARCH 2003 DRAWN BY: GML/KJP CHECKED BY: SPL

ANDERSON, ECKSTEIN AND WESTRICK, INC. Civil Engineers - Surveyors - Architects 51301 Schoonhert Road, Shelby Township, Michigan 48315 Phone 586-726-1234 Fax 586-726-6780

SCOTT LOCKWOOD ENGINEER No. 44255 SCOTT LOCKWOOD PE No. 44355