



TIE RODDED FOR MAINS 8 INCHES AND LARGER 2 COATS OF PAINT ON RODS

TIE RODDED IN ALL CASES (TYP)

SCHEDULE OF TIE RODS

PIPE DIAMETER	STEEL RESTRAINING RODS REQ'D	
	NO.	DIAMETER
4"	2	3/4"
6"	2	3/4"
8"	2	3/4"
10"	4	3/4"
12"	4	3/4"
16"	4	3/4"

MINIMUM LENGTH OF RESTRAINED JOINTS ON EACH SIDE OF FITTINGS

FITTING	MINIMUM LENGTH OF RESTRAINED JOINTS ON EACH SIDE OF FITTINGS	
	8"Ø DIP (150 PSI)	12"Ø DIP (150 PSI)
90° BEND, VALVE, CAPS, PLUGS	115'	153'
TEES (BRANCH)	115'	153'
45° BENDS	44'	58'
22 1/2° BENDS	23'	30'
11 1/4°	11'	15'

NOTES:

1. WATER MAIN MAY BE LOOPED ABOVE OBSTRUCTION IF 4' MINIMUM COVER IS MAINTAINED ABOVE WATER MAIN.
2. WATER MAIN SHALL BE DUCTILE IRON CEMENT LINED PIPE. ALL JOINTS SHALL BE MECHANICAL. JOINT AND ALL FITTINGS SHALL BE MECHANICAL JOINT DUCTILE IRON WITH RETAINER GLANDS.
3. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS AND OTHER POINTS OF PIPE DIRECTION CHANGE.
4. MINIMUM CLEARANCE BETWEEN SANITARY SEWER AND WATER MAIN SHALL BE 16" VERTICAL AND 10' HORIZONTAL. WHERE NOT POSSIBLE TO INSTALL WATER MAIN OVER SANITARY SEWER, THEN THE SEWER SHALL BE OF WATER TIGHT CONSTRUCTION WITH JOINTS 10' MINIMUM FROM THE WATER MAIN. CLEARANCE BETWEEN WATER MAIN AND OTHER OBSTRUCTIONS SHALL BE 12" VERTICAL.

NOTE:

CONTRACTOR SHALL USE THE ABOVE SCHEDULE AND THE CONTRACT PLAN SHEETS TO DETERMINE ACTUAL RESTRAINED LENGTHS REQUIRED. FITTINGS IN CLOSE PROXIMITY TO ONE ANOTHER MAY REQUIRE ADDITIONAL RESTRAINT. FOR EXAMPLE, TWO (2) 22 1/2° BENDS LOCATED WITHIN SEVERAL FEET OF EACH OTHER WILL HAVE THE SAME REACTION AS A 45° BEND AND, AS SUCH, WILL REQUIRE THE LENGTHS OF RESTRAINT SHOWN FOR A 45° BEND.

