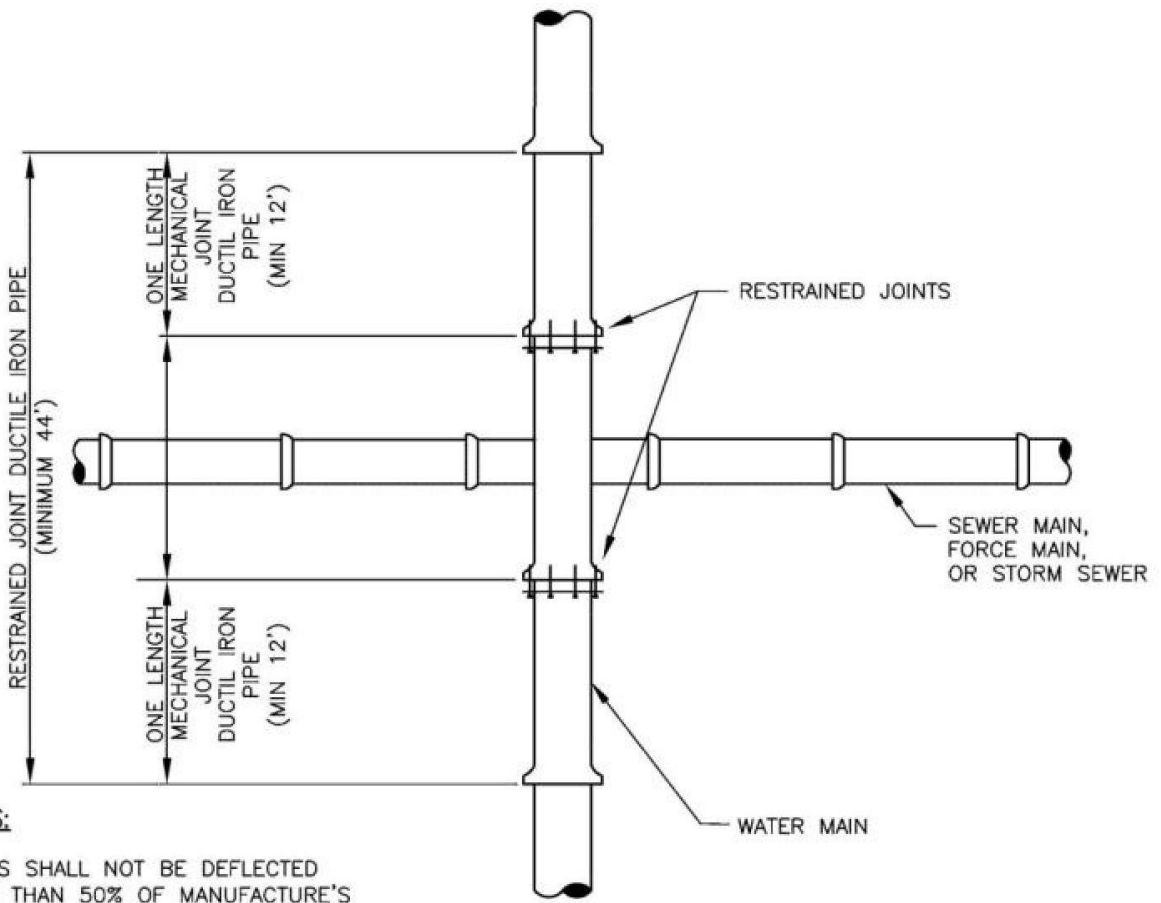
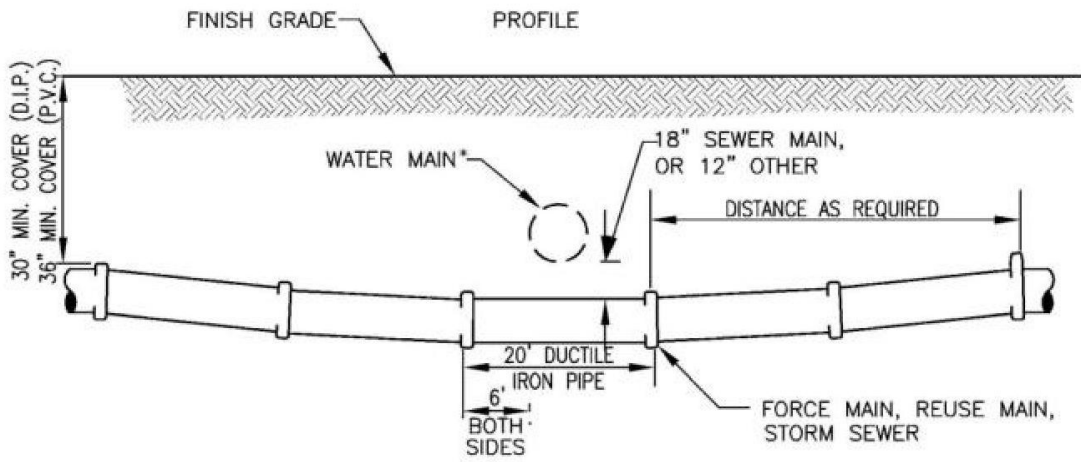
**NOTES:**

1. A WATER MAIN SHOULD CROSS OVER PIPES WHEREVER POSSIBLE MAINTAINING A 36 INCH COVER FOR P.V.C., 30 INCH COVER FOR D.I.P. AND 18 INCH SEPARATION AS MINIMUMS.
2. WHEREVER A WATER MAIN CROSSES UNDER A SEWER MAIN, OR CROSSES OVER WITH LESS THAN 18 INCHES VERTICAL SEPARATION, THEN D.I.P. SHALL BE USED FOR BOTH PIPES FOR A DISTANCE OF 20 FEET CENTERED ON CROSSING WITH NO JOINTS WITHIN 10 FEET OF THE CROSSING.
3. 18 INCH SEPARATION SHOULD BE MAINTAINED BETWEEN ALL PIPES (STORM, SEWER, WATER) WHENEVER POSSIBLE. 18 INCHES IS THE ABSOLUTE MINIMUM SEPARATION WITH D.I.P. ALLOWED FOR ANY SEPARATION LESS THAN 18 INCHES.
4. MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN WATER AND SEWER AS A MINIMUM.
5. 3 FOOT HORIZONTAL CLEARANCE SHALL BE PROVIDED BETWEEN WATER MAINS AND UTILITY OBSTRUCTIONS (CATCH BASINS, CONCRETE POLES, ETC.)

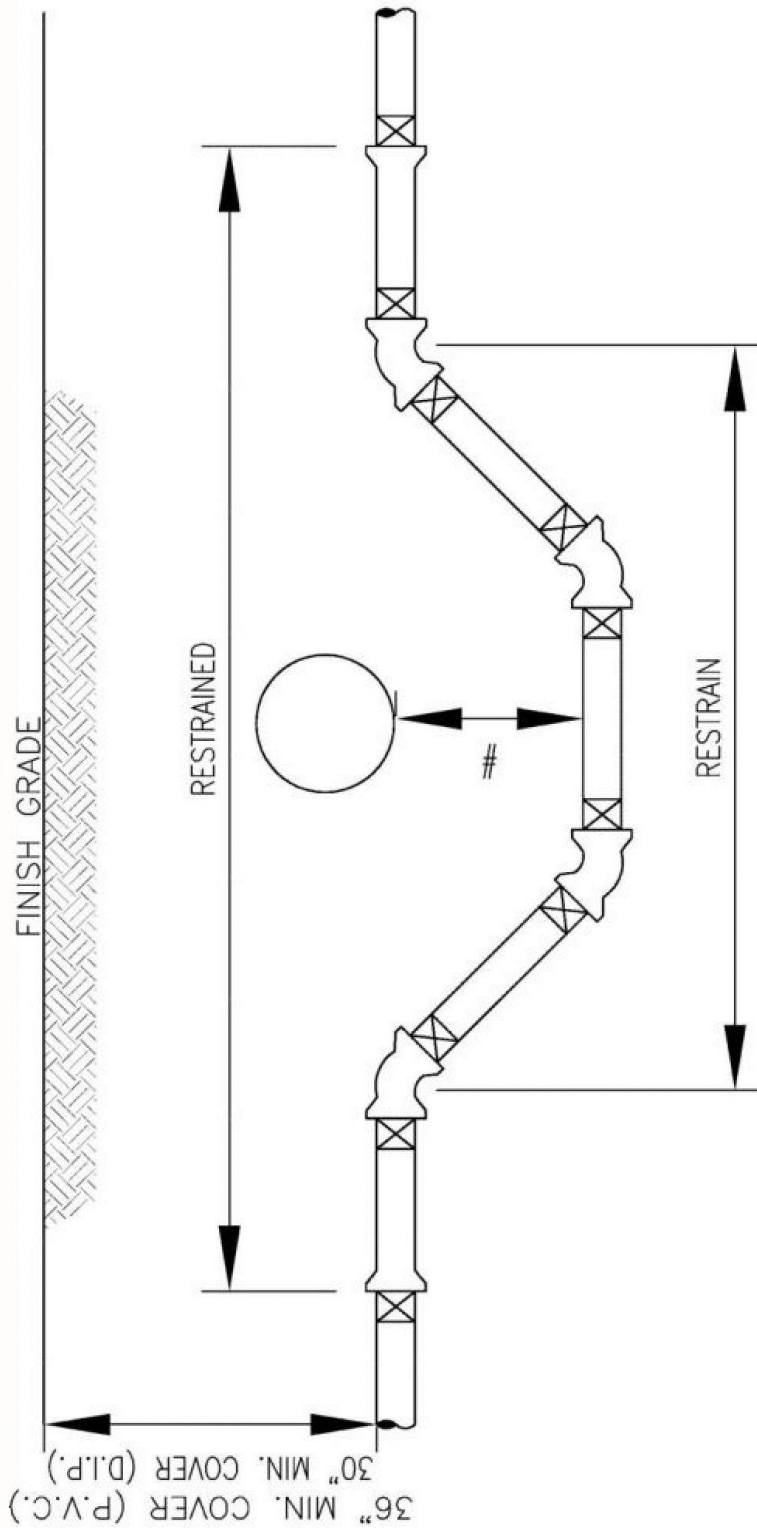


NOTES:

JOINTS SHALL NOT BE DEFLECTED MORE THAN 50% OF MANUFACTURE'S RECOMMENDED DEFLECTION

PLAN

WS-2 - Standard Utility Crossing



NOTE:

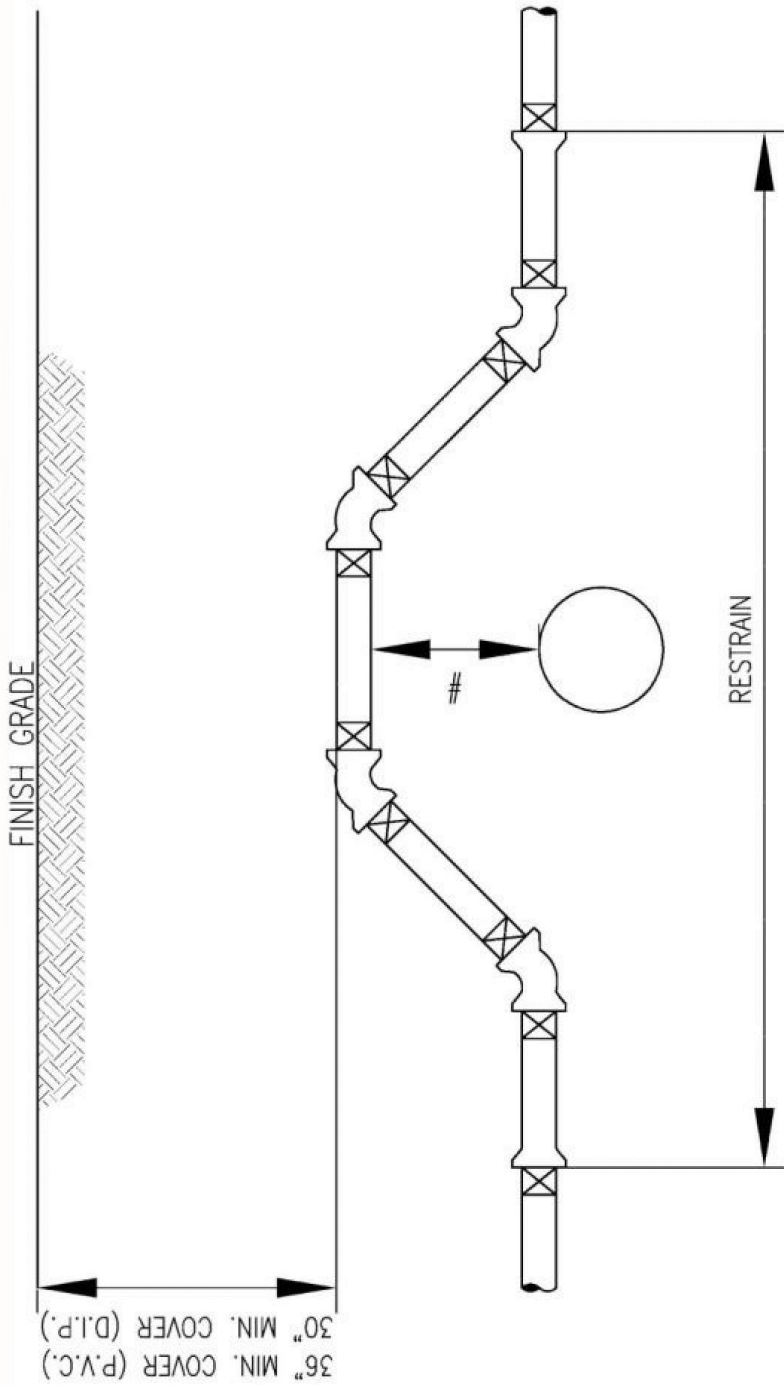
THE REQUIREMENTS SHALL BE CALCULATED IN ACCORDANCE WITH "THRUST RESTRAINT FOR DUCTILE IRON PIPE," VERSION 3.3 BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS. RESTRAINED LENGTH WILL BE DEPENDENT UPON SOIL CONDITION, PIPE, SIZE AND FITTING ANGLES.

- (#) 18" MINIMUM CLEARANCE REQUIRED FOR WATER & SEWER MAIN CROSSINGS,
- 12" MIN. CLEARANCE REQUIRED FOR OTHER UTILITIES CROSSINGS.

COMBINED DUCTILE IRON PIPE-VERTICAL OFFSET UNDER CONFLICT

150 PSI TEST PRESSURE

N T S



NOTE:

THE REQUIREMENTS SHALL BE CALCULATED IN ACCORDANCE WITH "THRUST RESTRAINT FOR DUCTILE IRON PIPE," VERSION 3.3 BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS. RESTRAINED LENGTH WILL BE DEPENDENT UPON SOIL CONDITION, PIPE, SIZE AND FITTING ANGLES.

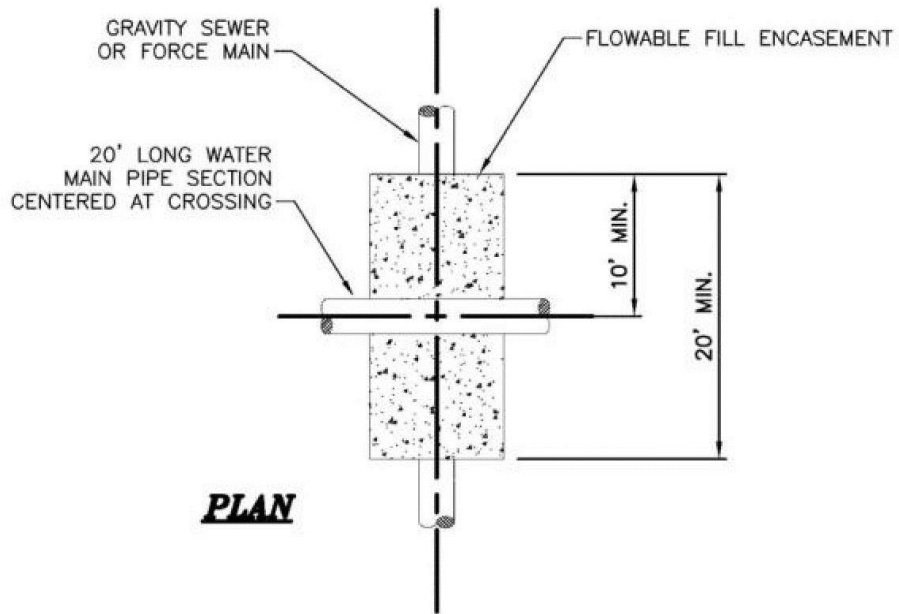
- (#) 18" MINIMUM CLEARANCE REQUIRED FOR WATER & SEWER MAIN CROSSINGS,
- 12" MIN. CLEARANCE REQUIRED FOR OTHER UTILITIES CROSSINGS.

COMBINED DUCTILE IRON PIPE—VERTICAL OFFSET OVER CONFLICT
150 PSI TEST PRESSURE

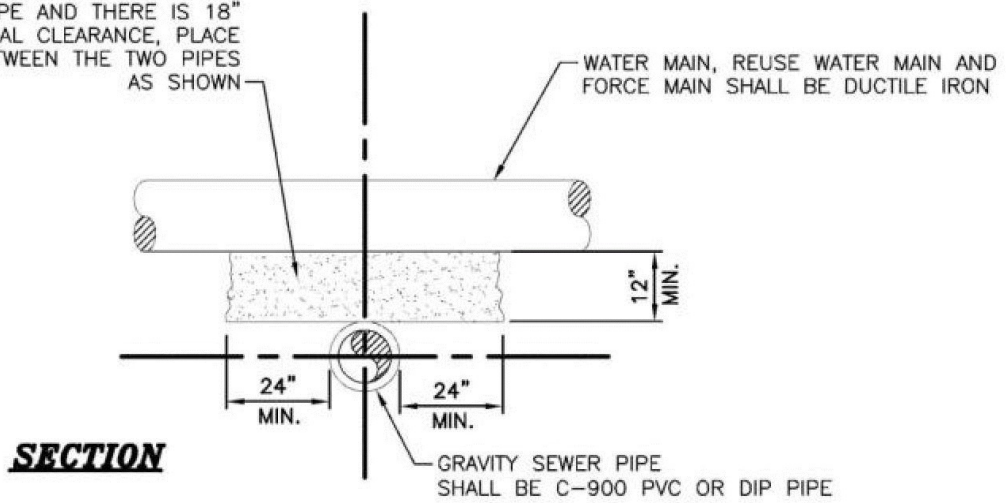
N.T.S.

WS-4 - Restrained Joint Requirements Combined Horizontal Offset Over Conflict

Date: February, 2010



WHEN A PIPELINE CROSSES OVER (OR UNDER) ANOTHER PIPE AND THERE IS 18" OR LESS VERTICAL CLEARANCE, PLACE FLOWABLE FILL BETWEEN THE TWO PIPES AS SHOWN



WS-5 - Flowable Fill Bedding between Crossing Pipes