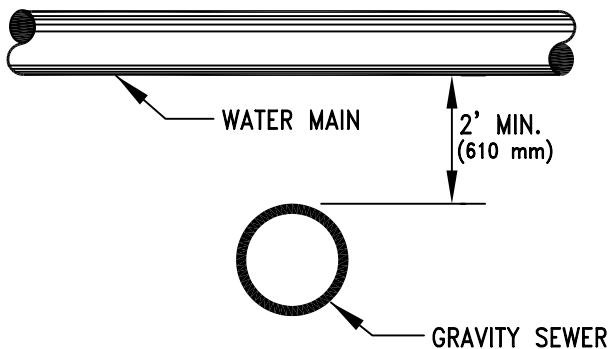
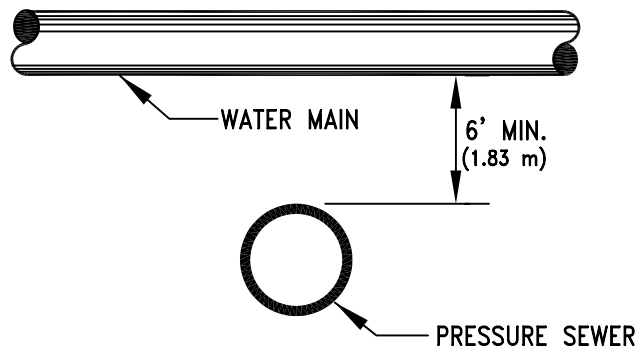


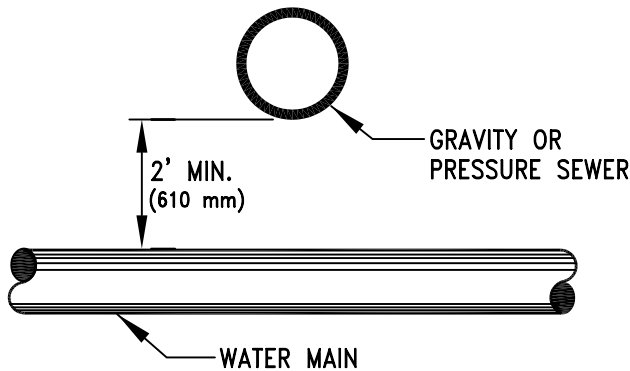
VERTICAL SEPARATION



GRAVITY SEWER CROSSING
(SEWER UNDER WATER MAIN)



PRESSURE SEWER CROSSING
(SEWER UNDER WATER MAIN)



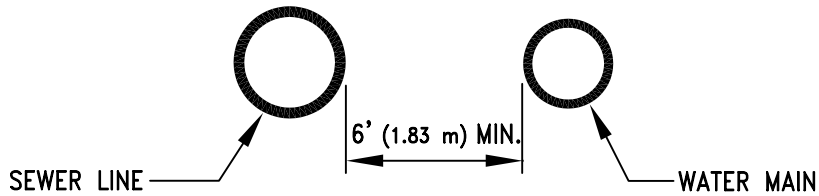
GRAVITY OR PRESSURE SEWER CROSSING
(SEWER ABOVE WATER MAIN)

NOTES:

1. WHERE A WATER MAIN CROSSES ABOVE A GRAVITY SEWER WITH 2' (610 mm) OR GREATER VERTICAL CLEARANCE (OUTSIDE SURFACE TO OUTSIDE SURFACE), NO EXTRA PROTECTION IS REQUIRED. WHERE A WATER MAIN CROSSES ABOVE A PRESSURE SEWER WITH 6' (1.8 m) OR GREATER VERTICAL CLEARANCE, NO EXTRA PROTECTION IS REQUIRED.
2. WHERE A WATER MAIN MUST CROSS ABOVE A GRAVITY SEWER WITH LESS THAN 2' (610 mm) OF CLEARANCE OR ABOVE A PRESSURE SEWER WITH LESS THAN 6' (1.83 m) OF CLEARANCE, CONSTRUCT OR REPLACE THE SEWER LINE WITH DUCTILE IRON PIPE (D.I.P.) OR APPROVED EQUAL. THE D.I.P. SHALL HAVE A "PUSH-ON" JOINT OR APPROVED EQUAL IF THE SEWER JOINTS ARE LOCATED 6' (1.8 m) OR MORE BEYOND THE OUTSIDE SURFACE OF THE WATER MAIN. IF THE JOINT IS LOCATED LESS THAN 6' (1.8 m) FROM THE OUTSIDE SURFACE OF THE WATER MAIN, THEN A RESTRAINED JOINT OR APPROVED EQUAL SHALL BE USED. REFER TO SHEET 3 OF 3. IN NO CASE SHALL THE WATER MAIN BE LESS THAN 1' (305 mm) ABOVE A GRAVITY SEWER OR 2' (610 mm) ABOVE A PRESSURE SEWER.
3. WHERE A WATER MAIN CROSSES BELOW EITHER A GRAVITY SEWER OR A PRESSURE SEWER, CONSTRUCT OR REPLACE THE SEWER LINE WITH D.I.P. OR APPROVED EQUAL FOLLOWING THE GUIDELINES GIVEN IN NOTE NO. 2. IN NO CASE SHALL THE WATER MAIN BE LESS THAN 2 FEET (610 mm) BELOW EITHER A GRAVITY OR PRESSURE SEWER LINE.

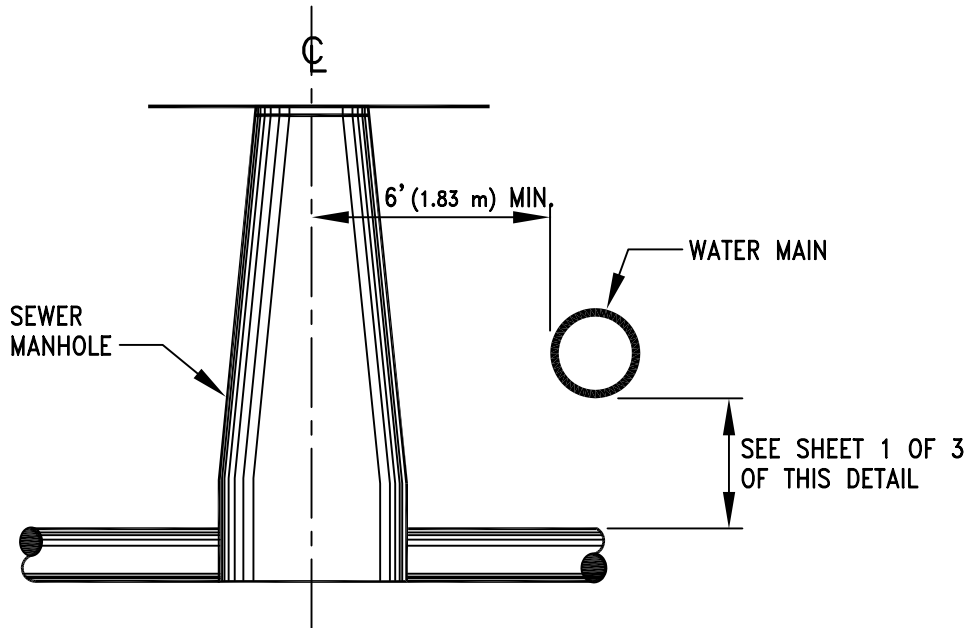
ISSUED:		STANDARD DETAIL		DETAIL NO.
11/94		SEWER / WATER		WWM 108
REVISED:		CROSSING DETAILS		SHEET 1 OF 3
7/02				

HORIZONTAL SEPARATION



SEWER / WATER SEPARATION

(PARALLEL ALIGNMENTS)

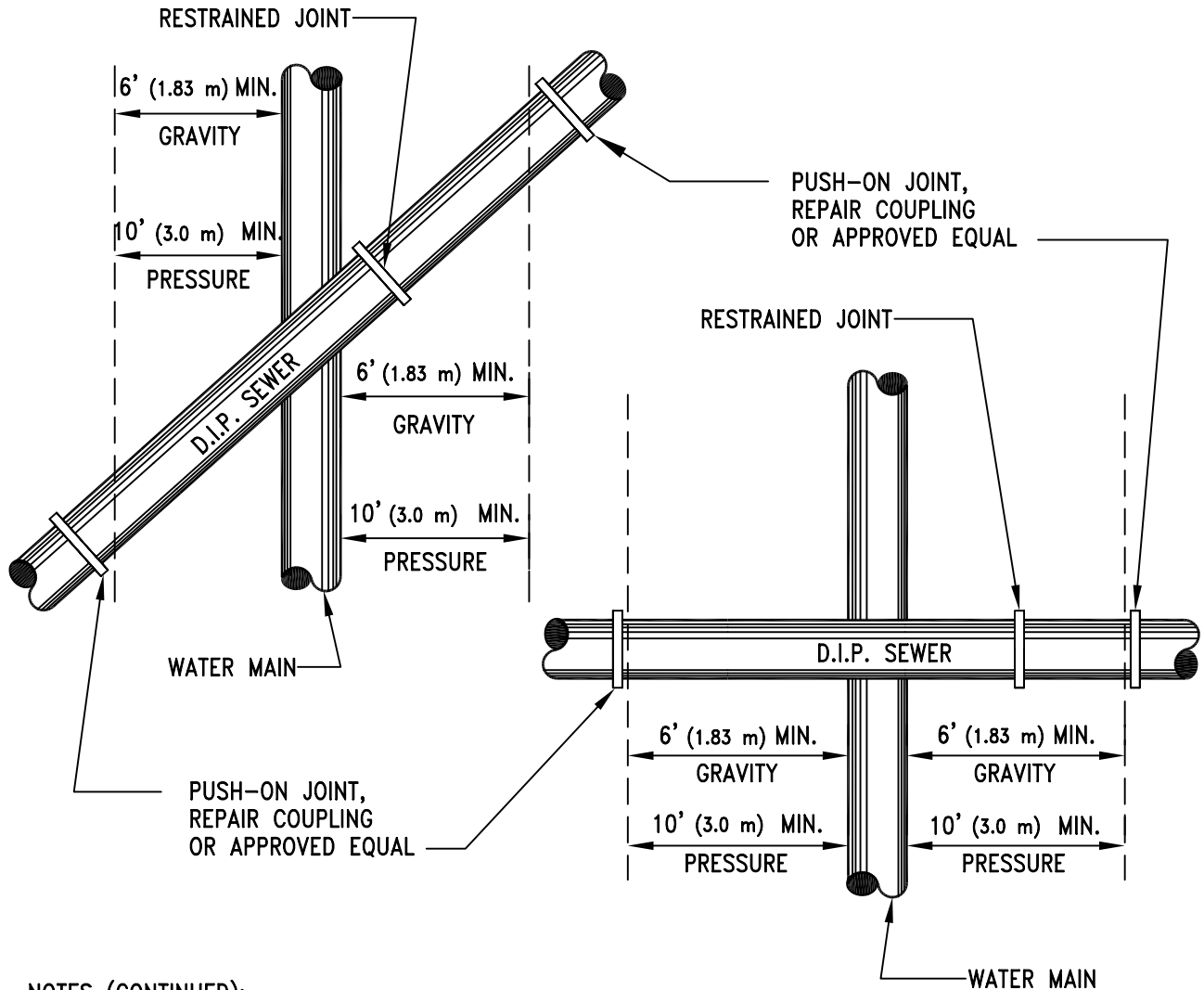


NOTES (CONTINUED):

4. THE MINIMUM HORIZONTAL CLEARANCE WITHOUT EXTRA PROTECTION BETWEEN A WATER MAIN AND A PRESSURE OR GRAVITY SEWER LINE SHALL BE 6' (1.83 m) OUTSIDE SURFACE TO OUTSIDE SURFACE.
5. THE MINIMUM HORIZONTAL CLEARANCE BETWEEN A WATER MAIN AND A SEWER MANHOLE SHALL BE 6' (1.83 m) FROM THE OUTSIDE SURFACE OF THE WATER MAIN TO THE CENTERLINE OF THE MANHOLE.
6. WHERE A 6' (1.83 m) HORIZONTAL CLEARANCE CANNOT BE MAINTAINED WITH A GRAVITY SEWER, CONSTRUCT OR REPLACE THE SEWER LINE WITH D.I.P. OR APPROVED EQUAL FOLLOWING THE GUIDELINES GIVEN IN NOTE NO. 2. IN NO CASE SHALL A GRAVITY SEWER LINE BE LOCATED LESS THAN 2' (610 mm) HORIZONTALLY FROM A WATER MAIN.
7. IN NO CASE SHALL A PRESSURE SEWER LINE BE LOCATED LESS THAN 6' (1.83 m) HORIZONTALLY FROM A WATER MAIN.
8. THE AMERICAN NATIONAL STANDARD FOR THE THICKNESS DESIGN OF DUCTILE IRON PIPE (ANSI/AWWA C150/A21.50) SHALL BE USED TO DETERMINE THE REQUIRED CLASS OF D.I.P. EXCEPT THAT FOR D.I.P. WITH A DIAMETER OF 3" (75 mm) THRU 24" (600 mm), A MINIMUM OF CLASS 350 (2.4 MPa) IS REQUIRED AND FOR D.I.P. WITH A DIAMETER GREATER THAN 24" (600 mm), A MINIMUM OF CLASS 200 (1.4 MPa) IS REQUIRED.

ISSUED:		STANDARD DETAIL		DETAIL NO.
8/92		SEWER / WATER		WWM 108
REVISED:		CROSSING DETAILS		
7/02				SHEET 2 OF 3

PLAN VIEWS



NOTES (CONTINUED):

9. WHERE THE SEWER LINE IS A GRAVITY SEWER, THE D.I.P. INSTALLATION OR REPLACEMENT SHALL EXTEND A MINIMUM OF 6' (1.83 m) BEYOND EACH SIDE OF THE WATER MAIN, MEASURED HORIZONTALLY FROM AND PERPENDICULAR TO THE WATER MAIN.
10. WHERE THE SEWER LINE IS A PRESSURE SEWER, THE D.I.P. INSTALLATION OR REPLACEMENT SHALL EXTEND A MINIMUM OF 10' (3.0 m) BEYOND EACH SIDE OF THE WATER MAIN, MEASURED HORIZONTALLY FROM AND PERPENDICULAR TO THE WATER MAIN.
11. WHEN UNUSUAL CONDITIONS SUCH AS, BUT NOT LIMITED TO, HIGHWAY OR BRIDGE CROSSINGS PREVENT THE WATER AND SEWER LINE SEPARATIONS REQUIRED BY THIS DETAIL FROM BEING MET, THE PIMA COUNTY WASTEWATER MANAGEMENT DEPARTMENT WILL REVIEW AND MAY APPROVE (SUBJECT TO ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY APPROVAL), REQUESTS FOR AUTHORIZATION TO USE ALTERNATE CONSTRUCTION TECHNIQUES, MATERIALS AND JOINTS ON A CASE-BY-CASE BASIS.
12. ALL DUCTILE IRON PIPE SHALL BE INTERNALLY LINED TO MEET THE MOST RECENT PIMA COUNTY WASTEWATER DEPARTMENT SPECIFICATIONS.

ISSUED:		STANDARD DETAIL		DETAIL NO.
8/92		SEWER / WATER		WWM 108
REVISED:		CROSSING DETAILS		SHEET 3 OF 3
7/02				