

**GENERAL**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, TRAFFIC CONTROL, SHORING AND BRACING OF JACKING AND RECEIVING PITS, BEDDING, BACKFILL, OVER EXCAVATION, COMPACTION AND ANY OTHER WORK NOT SPECIFICALLY MENTIONED HEREIN, CONSIDERED BY THE AGENCY TO BE ASSOCIATED WITH THE INSTALLATION OF THE CARRIER PIPE INSIDE THE STEEL CASING. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS SPECIFIED HEREIN, ON THE APPROVED PLANS AND IN THE SPECIAL SPECIFICATIONS.

**CASING**

CASING SHALL BE NEWLY FABRICATED ROLLED, WELDED STEEL IN ACCORDANCE WITH AWWA C200 OR ASTM A139B. SPIRAL WELDED PIPE SHALL NOT BE ALLOWED. NO EXTERIOR OR INTERIOR LININGS ARE REQUIRED. WALL THICKNESS SHALL BE THE GREATER OF THAT SHOWN IN THE TABLE ON SHEET 2 OF THIS DETAIL, OR AS CALLED OUT ON THE DRAWINGS.

THE MAXIMUM ALLOWABLE LINE AND GRADE DEVIATION SHALL BE 2 INCHES, OR 1 INCH PER 100 FEET, WHICHEVER IS GREATER.

CASING SHALL BE BUTT WELDED AROUND THE ENTIRE EXTERIOR CIRCUMFERENCE OF EACH JOINT TO PROVIDE A WATER TIGHT SEAL. THE INTERIOR OF THE BUTT WELD JOINT SHALL HAVE NO GAP GREATER THAN 1/16 INCH, OR RADIAL MISALIGNMENT GREATER THAN 1/8 INCH. CONTRACTOR SHALL PROVIDE MEANS OF CHECKING LINE AND GRADE AT LEAST ONCE A DAY. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH ASME SECTION 9. THE INTERIOR SURFACE OF THE CASING SHALL NOT BE ERRATIC, BUT SMOOTH SO NOT TO IMPEDE CARRIER PIPE INSTALLATION, REMOVAL, OR DAMAGE SKIDS.

THE CONTRACTOR SHALL SUBMIT A PLAN TO PRESSURE GROUT ALL VOIDS IN THE SPACE BETWEEN THE EXTERIOR OF THE CASING AND THE SOIL. THE GROUTING PLAN MUST BE APPROVED BY THE AGENCY PRIOR TO CONSTRUCTION.

**CASING INSULATORS/SPACERS**

CASING INSULATORS/SPACERS SHALL CONSIST OF A STEEL BAND AND RISERS MADE OF T-304 STAINLESS STEEL OR CARBON STEEL WITH A FUSION BONDED EPOXY OR PVC COATING. BAND AND RISER SIZING AND THICKNESS SHALL BE PER THE MANUFACTURER'S RECOMMENDATION AND BASED ON PIPE SIZE AND MATERIAL. POLYVINYL CHLORIDE (PVC) OR ETHYLENE PROPYLENE DIENE MONOMER (EPDM) LINERS SHALL BE PROVIDED BETWEEN THE SPACER AND CARRIER PIPE. RUNNERS SHALL BE GLASS REINFORCED PLASTIC OR OTHER ABRASION RESISTANT INSULATING MATERIAL. UNLESS OTHERWISE SPECIFIED, MINIMUM INSTALLED CLEARANCE BETWEEN THE CARRIER PIPE AND OR MECHANICAL CONNECTIONS AND THE STEEL CASING SHALL BE TWO INCHES.

INSULATORS/SPACERS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDED ORIENTATIONS TO PROVIDE ADEQUATE STRUCTURAL SUPPORT AND DIELECTRIC SEPARATION BETWEEN THE CARRIER PIPE AND THE STEEL CASING. SPACERS/INSULATORS NOT INSTALLED AS RECOMMENDED, OR DAMAGED DURING INSTALLATION, SHALL BE REPLACED AND REINSTALLED AT NO ADDITIONAL COST TO THE AGENCY. GUIDES MAY BE INSTALLED AS NECESSARY TO PREVENT RIFLING (ROTATING) OF THE PIPE DURING INSTALLATION. THE CONTRACTOR SHALL USE AN APPROVED LUBRICANT ON THE INTERIOR OF THE CASING TO AID IN INSTALLATION. LUBRICANT SHALL BE APPROVED BY THE AGENCY PRIOR TO CONSTRUCTION.

**CASING END SEALS**

CASING END SEALS SHALL BE CALPICO END SEAL, MODEL C OR APPROVED EQUAL.

**CARRIER PIPE**

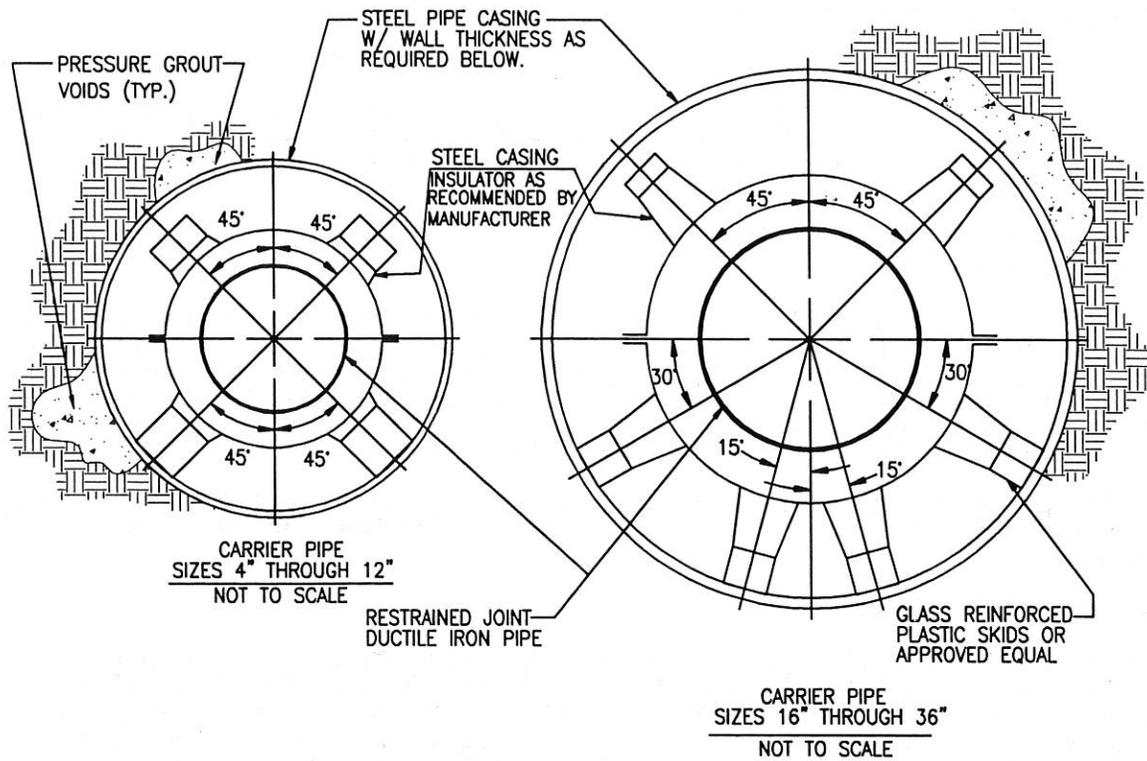
UNLESS OTHERWISE SPECIFIED ON THE PLANS, CARRIER PIPE SHALL BE RESTRAINED JOINT DUCTILE IRON PIPE AND MEET THE REQUIREMENTS OF THE TUCSON WATER STANDARD SPECIFICATIONS AND DETAILS. UNLESS OTHERWISE APPROVED, DUCTILE IRON PIPE 4-INCHES THROUGH 12-INCHES IN DIAMETER SHALL BE PRESSURE CLASS 350 AND DUCTILE IRON PIPE GREATER THAN 12-INCHES IN DIAMETER SHALL BE MINIMUM PRESSURE CLASS 250.

THE CARRIER PIPE SHALL AND INSULATORS/SPACERS SHALL BE INSPECTED, TESTED AND APPROVED BY THE AGENCY PRIOR TO INSTALLATION OF THE END SEALS.

**TESTING**

PRIOR TO AND AGAIN FOLLOWING FINAL BACKFILL AND COMPACTION, THE CONTRACTOR'S NACE INTERNATIONAL-CERTIFIED CORROSION TECHNOLOGIST SHALL VERIFY THAT THE CARRIER PIPE AND CASING ARE ELECTRICALLY ISOLATED FROM ONE ANOTHER. VERIFICATION SHALL BE INCLUDED IN THE FINAL CORROSION REPORT.

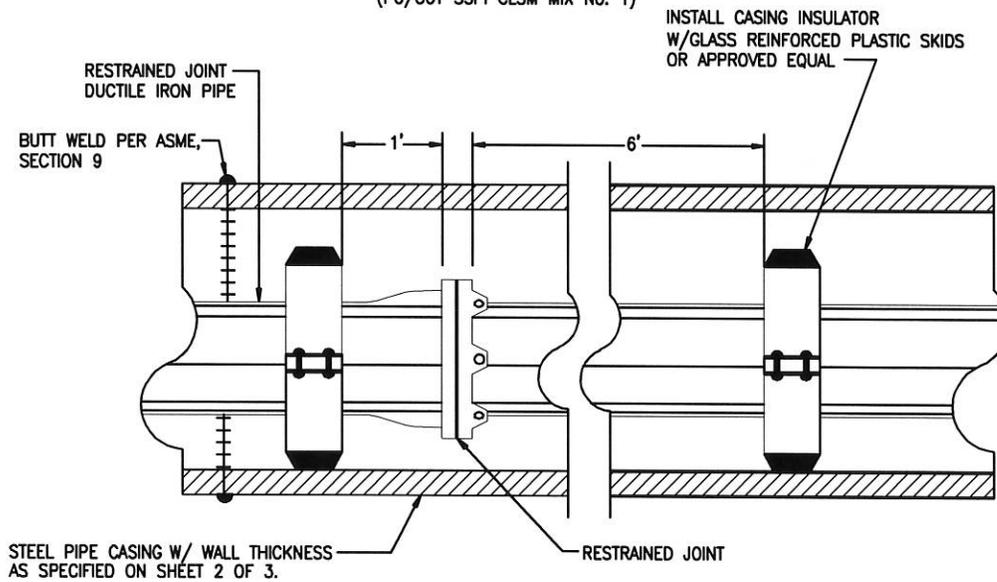
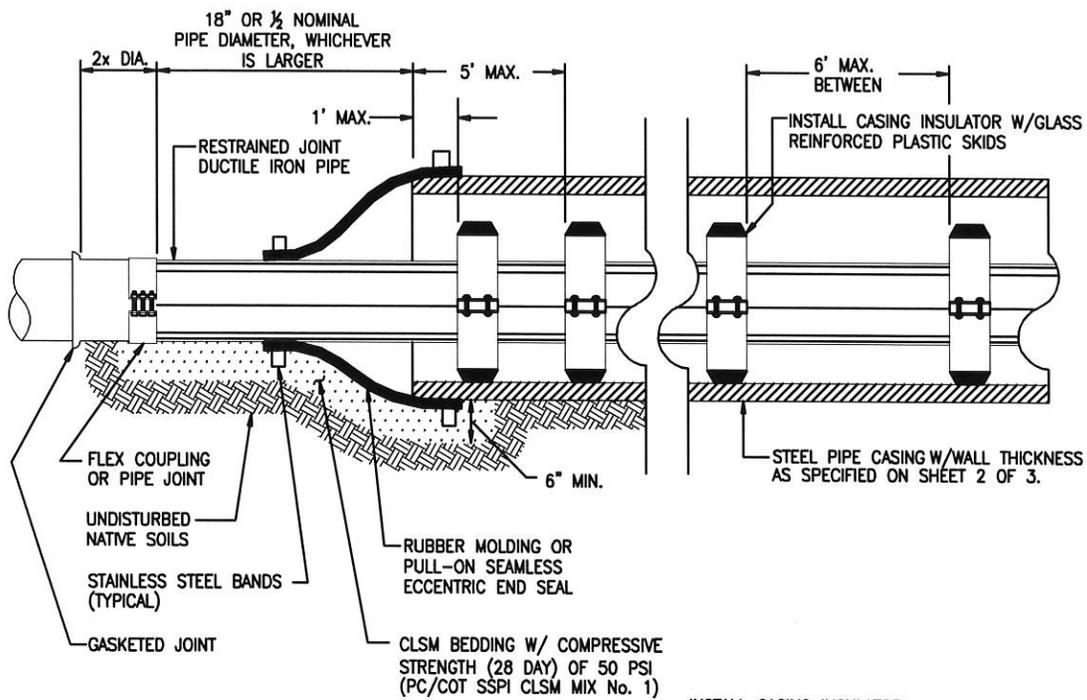
<b>ISSUED:</b>		<b>STANDARD DETAIL</b>		<b>DETAIL NO.</b>
<b>6/97</b>		<b>BORING AND CASING NOTES</b>		<b>SD-800</b>
<b>REVISED:</b>				
<b>7/11</b>				<b>SHEET 1 OF 3</b>



PIPE SIZE	MATERIAL		
	RESTRAINED JOINT DUCTILE IRON PIPE		
	MAX. O.D. RESTRAINED JT.	MIN. CASING O.D.	MIN. CASING THICKNESS <sup>●</sup>
4"	10.20"	18"	0.3125"
6"	12.30"	18"	0.3125"
8"	14.45"	22"	0.375"
12"	18.30"	28"	0.4375"
16"	22.90"	32"	0.50"
24"	32.94"	40"	0.50"
30"	39.17"	48"	0.50"
36"	46.00"	56"	0.50"

- MINIMUM THICKNESS OF CASING GREATER THAN 56" SHALL BE SPECIFIED BY THE ENGINEER.
- INSULATORS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. APPROVED INSULATORS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER.

ISSUED:		<b>STANDARD DETAIL</b>		DETAIL NO.
6/97		<b>BORING AND CASING</b>		<b>SD-800</b>
REVISED:				
7/11				<b>SHEET 2 OF 3</b>



NOT TO SCALE

ISSUED:		<b>STANDARD DETAIL</b>		DETAIL NO.
6/97		<b>BORING AND CASING</b>		<b>SD-800</b>
REVISED:				<b>SHEET 3 OF 3</b>
7/11				