

Section XXIV

CASING, SPACERS AND END SEALS FOR UTILITIES

This section provides guidance for the materials and installation of casing pipes to be bored under highways, etc.

All design criteria, materials, and construction shall be in accordance with DHEC regulations, AWWA, and ASTM standards.

A. GENERAL

1. Provide bore and jack with casing for pipes larger than 2".
2. Casing pipe to be at least 3" larger in diameter than the bell of the carrier pipe.
3. Carrier pipe to be ductile iron for 3" and larger.

B. CASING PIPE FOR DRY BORES

1. Steel complying with ASTM A139 for Grade B with minimum yield strength of 35,000 psi.
2. Provide ends suitable for field welding.
3. Minimum wall thickness as follows:

<u>Diameter of Casing</u> (Inches)	<u>Minimum Wall Thickness</u> (Inches)
6 thru 14	1/4
16 and 18	5/16
20 and 22	3/8
24 and 26	7/16
28 thru 32	1/2
34 thru 42	9/16
44 thru 48	5/8
50 thru 54	3/4

C. PIPELINE CASING SPACERS:

1. Provide pipeline casing spacers for piping installed in casing.
2. Provide a minimum of one spacer per ten linear feet of pipe for ductile iron pipe.
3. Provide spacer with shell of 14 gauge Type 304 stainless steel.

4. Provide shell liner of .090" thick PVC, 85-90 durometer.
5. Provide 5/16" stainless steel connecting bolts and lock nuts, minimum three (3) per flange.
6. Runners from 2" wide ultra high molecular weight polymer with a high resistance to abrasion and a coefficient of friction of 0.11-0.13 in accordance with ASTM D-1894.
7. Support runners on 14 gauge reinforced Type 304 stainless steel risers welded to shell.
8. All metal surfaces to be fully passivated.
9. The diameter as measured over the runners shall exceed the pipeline bell or coupling outside diameter.
10. Acceptable product: Cascade Manufacturing or approved equal.

D. END SEALS:

1. Provide _" thick rubber end seal to seal each end of the casing.
2. Sewer to casing and carrier pipe with Type 304 stainless steel bands.
3. Acceptable product: Cascade Manufacturing or approved equal.

E. INSTALLATION:

1. Locate to avoid interference with traffic, adjacent structures, etc. to such extent possible.
2. Excavate to required depth, providing sheeting and shoring necessary for protection of the work and for safety of personnel.
3. Maintain entry pits in dry condition by use of pumps, drains or other approved method.
4. Install casings by dry-boring through the casing while simultaneously jacking the casing.
5. Any proposed alternate method shall be approved in writing by the District.
6. Weld joints to provide a watertight joint.
7. Install casings for gravity sanitary sewer to grade, not varying more than 3/32" per foot of length from the indicated grade.
8. Installing pipe in casing:
 - a. Inspect carefully, insuring that all foreign material is removed from the casing and the casing meets alignment criteria for the type of carrier pipe being used.

- b. For pressure systems, the casing deflection shall not exceed the maximum deflection recommended by the carrier pipe.
 - c. Install casing spacers on the carrier pipe per the manufacturer's instructions.
 - d. For sanitary sewer provide spacer sizing and length necessary to obtain the pipe slope and elevations as shown on the plans.
 - e. Provide centered or restrained configuration.
 - f. Install the carrier pipe in the casing insuring each joint is pushed "home" before the joint is installed into the casing.
9. Install rubber end seals in accordance with manufacturer's instructions.