
Casing Pipe

Design Manual

Chapter 11

Miscellaneous

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Utilities frequently are encased in a steel pipe when crossing under roadways or railroads. Steel casing pipe complying with ASTM A 252, Standard Specification for Welded and Seamless Steel Pipe Piles is generally used.

Depending on the timing of the installation, the casing pipe can be installed either in an open cut trench or by trenchless techniques (See Section 2554 of the Standard Specifications).

The casing pipe thickness and casing pipe diameter is to be specified on the plans.

Casing Thickness

The casing pipe must have sufficient thickness to withstand both earth loads and live loads imposed from traffic above. Table 1 provides minimum recommended casing pipe thicknesses for both roadway and railroad installations. The roadway values are based on common industry standards. The railroad values are based on American Railway Engineering and Maintenance-of-Way Association (AREMA) design standards. Individual railroad standards may vary.

Casing Diameter

The casing diameter should be sized to provide a minimum of 4 inches (100 mm) between the inside of the casing pipe and the largest outside diameter of the carrier pipe (including pipe bells) to allow for deflection of the casing pipe and installation of casing spacers.

Table 1: Minimum Casing Pipe Thickness

NOMINAL DIAMETER INCHES (mm)*	WALL THICKNESS, MINIMUM INCHES (mm)	
	UNDER HIGHWAY	UNDER RAILROAD
6 thru 14 (150 thru 355)	0.188 (4.78)	0.25000 (6.35)
16 (465)	0.188 (4.78)	0.28125 (7.14)
18 (450)	0.25 (6.35)	0.31250 (7.94)
20 (510)	0.25 (6.35)	0.34375 (8.73)
22 (560)	0.25 (6.35)	0.34375 (8.73)
24 (600)	0.281 (7.14)	0.37500 (9.53)
26 (660)	0.281 (7.14)	0.40625 (10.32)
28 (710)	0.312 (7.92)	0.43750 (11.11)
30 (750)	0.312 (7.92)	0.46875 (11.91)
32 (815)	0.312 (7.92)	0.50000 (12.70)
34 (865)	0.312 (7.92)	0.53125 (13.49)
36 (900)	0.344 (8.74)	0.53125 (13.49)
38 (965)	0.344 (8.74)	0.56250 (14.29)
40 (1015)	0.344 (8.74)	0.59375 (15.08)
42 (1050)	0.344 (8.74)	0.62500 (15.88)
44 (1120)	0.344 (8.74)	0.65625 (16.67)
46 (1170)	0.344 (8.74)	0.65625 (16.67)
48 (1200)	0.344 (8.74)	0.68750 (17.46)
50 (1270)		0.71875 (18.26)
52 (1320)		0.75000 (19.05)
54 (1370)		0.78125 (19.84)
56 (1420)		0.81250 (20.64)
58 (1470)		0.81250 (20.64)
60 (1525)		0.84375 (21.43)
62 (1575)		0.87500 (22.23)
64 (1625)		0.90625 (23.02)
66 (1675)		0.93750 (23.81)
68 (1725)		0.93750 (23.81)
70 (1780)		0.96875 (24.61)
72 (1830)		1.00000 (25.40)

Note: Minimum thicknesses assume a minimum of 4.5 feet (1.37 m) of cover over the top.

* Additional casing diameters are available.