

Trenching

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2. Purpose

The purpose of this document is to present the Utility's design requirements for Steel Sleeve Encased Boring in cases where it is not possible or practical to utilize tradition trenching methods for installation of conduit. This type of installation method utilizes a steel sleeve in which conduits are installed using appropriate spacers. The sleeve is filled with grout to strengthen the sleeve and to stabilize and protect the conduits within the sleeve.

The size and number of conduits for any particular bore may vary, and a wide variety of both predesigned as well as custom made spacers are available to accommodate any desired configuration of conduits. This specification addresses the general requirements applicable to all installations. All spacers shall be designed to accommodate Schedule 80 PCV conduit.


3. Sleeve Requirements

Steel sleeves used to encase conduits may be 18", 24", 30", or 36" in diameter. Sleeves having a diameter of 18" to 24" must have a minimum, wall thickness of 0.375". Sleeves having a diameter of 30" must have a minimum wall thickness of 0.500". Sleeves having a diameter of 36" must have a minimum wall thickness of 0.532".

4. Spacer Material and Design Requirements

Bore spacers shall conform to the requirements below and **BIDDER** shall verify that spacers meet the following specifications:

1. **MATERIAL:** 0.750 ± 0.075 thick high-density polyethylene (HDPE) stress relieved sheets.
2. **COLOR:** Natural white.
3. **TENSILE STRENGTH:** 4600 PSI.
4. **ELONGATION:** 900%
5. **COMPRESSIVE STRENGTH:** 2700 to 3600 PSI.
6. Factory installed 2" diameter polyolefin, compact wheel assembly (2 required) on Bore Spacers that accommodated up to a 30.0" O.D. steel casing pipe. On a 36.0" O.D. steel casing pipe, Bore Spacers should come with factory installed 3" diameter polyolefin, compact wheel assembly (2 required).
7. Opening for optional ½" cable to stabilize duct bank during installation. (2 required)
8. Float stop (2 required).
9. A 0.875 clearance between the bore spacer O.D. and casing I.D.
10. The perimeter of Bore Spacer is scalloped for maximum grout flow area.
11. The minimum distance between conduits shall be 3.0 inches.
12. All conduits shall be Schedule 80.

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13. The minimum distance between spacers shall be 10 feet.
14. The Bore Spacers shall have maximum float measurements specific to each individual Bore Spacer design. Maximum float is defined as the amount of space between the casing wall and the (float stop) top of the Bore Spacer.
 - A. Figure 1 Bore Spacer, **1.116"** maximum float.
 - B. Figure 2 Bore Spacer, **1.292"** maximum float.
 - C. Figure 3 Bore Spacer, **1.106"** maximum float.
 - D. Figure 4 Bore Spacer, **1.261"** maximum float.
 - E. Figure 5 Bore Spacer, **1.578"** maximum float.

5. Typical Spacers

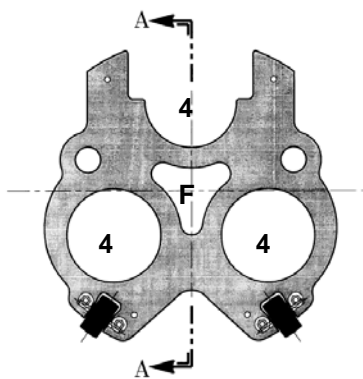


Figure 1. 3-4" Conduits

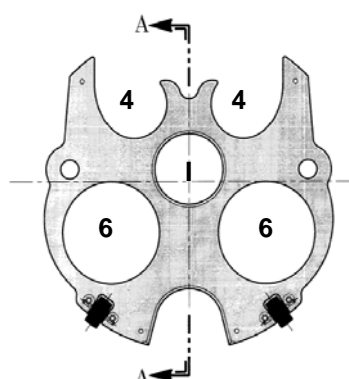


Figure 2. 2-6" & 2-4" Conduits

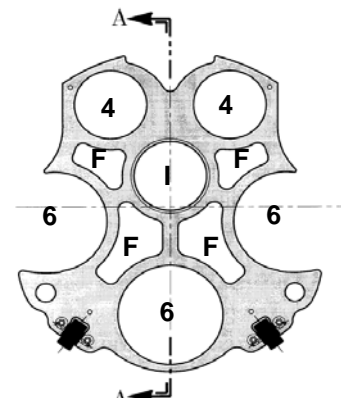


Figure 3. 3-6" & 2-4" Conduits

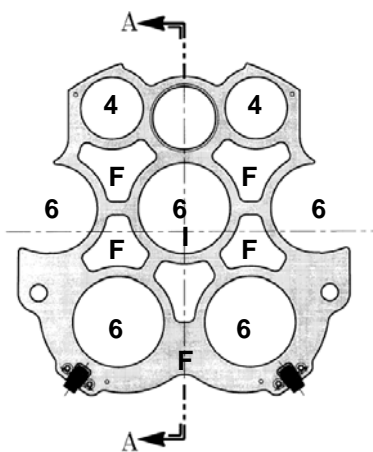


Figure 4. 5-6" & 2-4" Conduits

NOTE:

4 = A 4" conduit
 6 = A 6" conduit
 F = Flow hole for grout
 I = Grout Injection pipe hole
 Use a minimum of Sch. 40 PVC pipe.
 Minimum distance between conduits is 3.0 inches.

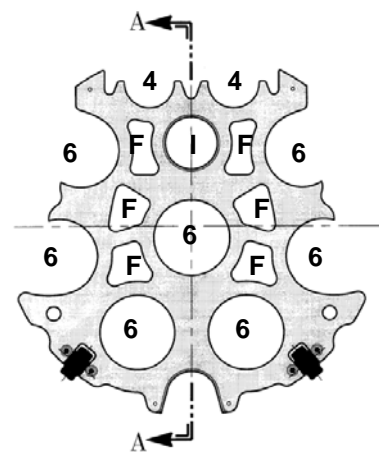



Figure 5. 7-6" & 2-4" Conduits

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BORE SPACERS AND CASINGS


Steel Casing		Number of Conduits & Size *Min. Sch. 40 PVC pipe to be used	Wheel Size	Manufacturers & Catalog Number	
Casing O.D.	Casing Wall Thickness			Underground Devices, Inc.	Future
18.00" (Fig. 1)	0.375"	3 – 4"	2"	BS3404W2	N/A
24.00" (Fig.2)	0.375"	2 – 6" & 2 – 4"	2"	BS3406W2	N/A
24.00" (Fig. 3)	0.375"	3 – 6" & 2 – 4"	2"	BS3405W2	N/A
30.00" (Fig. 4)	0.500"	5 – 6" & 2 – 4"	2"	BS3407W2	N/A
36.00" (Fig. 5)	0.532"	7 – 6" & 2 – 4"	3"	BS3382W2	N/A

NOTES:

- The above list represents only a small number of typical approved spacers for illustrative purposes. There are many other possible acceptable designs, and the spacers specified for any particular project will depend on the number and size of conduits that are required to be installed. Spacers may be selected from a variety of predesigned and cataloged types, or spacers may be custom designed and ordered if a predesigned spacer is not available. **NVE T&D Standards must pre-approve all bore spacers that are not shown on this standard.**

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