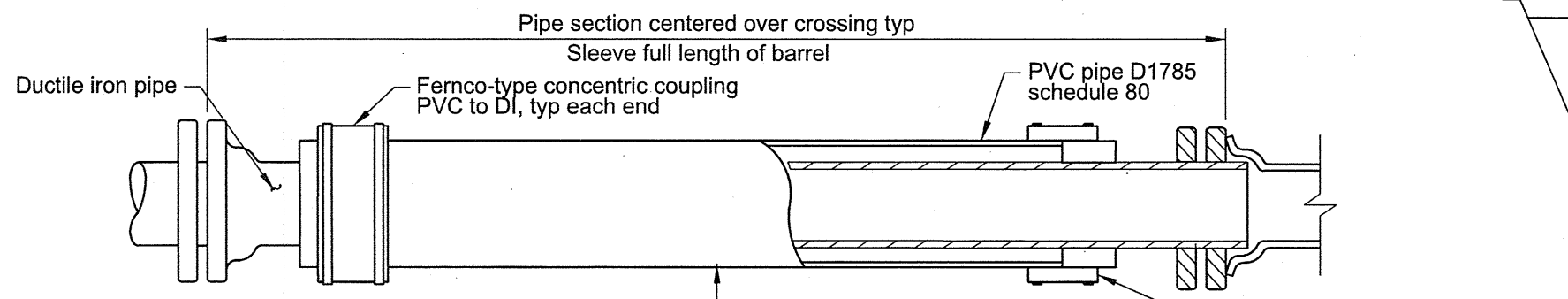
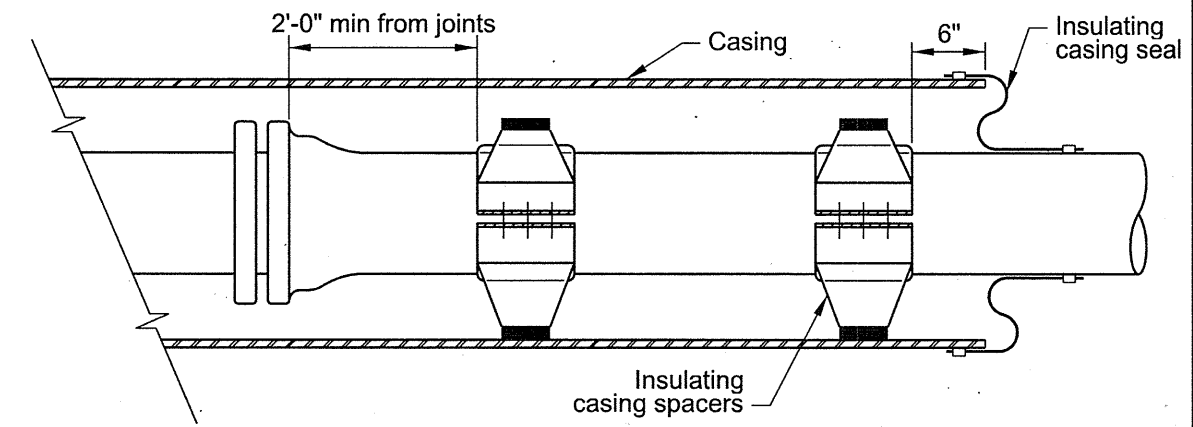


**Sleeve Wrapped**



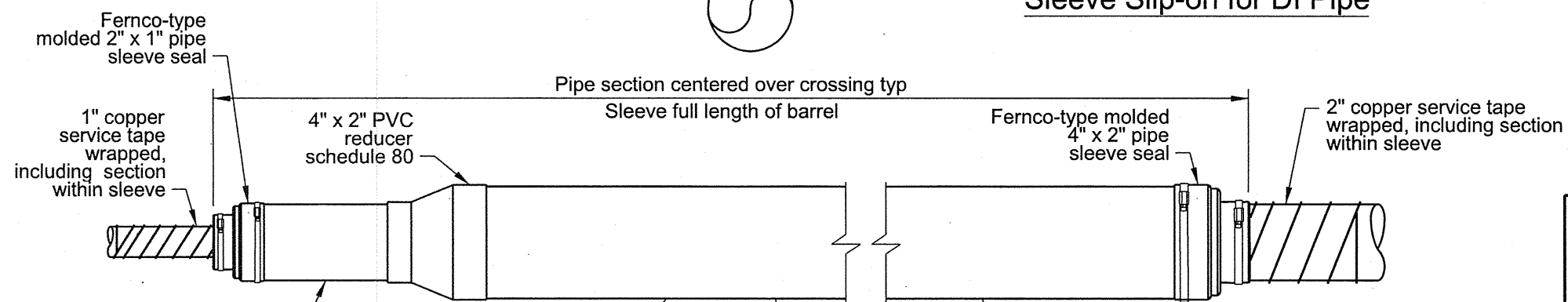
**Sleeve Slip-on for DI Pipe**



**Notes:**

1. Provide a spacer within 6" of each casing end. Provide intermediate spacers as required, not to exceed the maximum distance specified by the manufacturer.
2. Install casing seal per manufacturer requirements to prevent tensioning seal during backfill.

**Casing Spacers & End Seals**




**Sleeve Slip-on for Copper Service**

**Notes:**

1. Provide a sleeve when crossing over or under potential stray current sources.
2. When sleeving a pipe joint provide 2 casing spacers, 1 each side of joint.
3. Copper shall be wrapped with 20 mil PVC tape, 50% overlap, 40 mil total, inside & outside PVC sleeve.
4. Overlap geomembrane sheeting a minimum of 1/4 the of pipe circumference. Ensure overlap runs along crown of pipe.
5. Sleeves and casings shall be dry & moisture free before sealing.

Cathodically protected foreign structure

<p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.</p>	 <p>PORTLAND WATER BUREAU CITY OF PORTLAND, OREGON</p> <p><i>[Signature]</i> Chief Engineer</p>	
	<p>Standard Drawing Title</p> <p><b>SLEEVED AND CASED PIPE</b></p>	
<p>Note: All material and workmanship shall be in accordance with City of Portland Standard Construction Specifications.</p>	<p>Effective Date <b>Dec 17, 2009</b></p>	<p>Standard Drawing No.</p> <p><b>P-770</b></p>
	<p>Calc. Book No. <b>PWB-1</b></p>	
	<p>Baseline Report Date <b>12/17/2009</b></p>	

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