

Construction Specification 442—Concrete Pipe Conduits

1. Scope

The work shall consist of furnishing and installing concrete pipe or concrete box culverts and the necessary fittings as shown on the drawings.

2. Material

Concrete culvert pipe shall conform to the requirements of Material Specification 542, Concrete Culvert Pipe, for the kind of pipe specified.

Pipefittings shall conform to the requirements of the applicable pipe specifications.

Sealing compound for filling rubber gasket joints shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Hot-pour joint sealer shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Cold-applied sealing compound shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Preformed sealing compound shall conform to the requirements of Material Specification 536, Sealing Compound for Joints in Concrete and Concrete Pipe.

Joint packing shall be commercial grade oakum.

Preformed expansion joint filler shall conform to the requirements of Material Specification 535, Preformed Expansion Joint Filler.

Portland cement concrete for bedding and cradles shall conform to Construction Specification 31, Concrete for Major Structures, or Construction Specification 32, Structure Concrete.

3. Laying and bedding

Pipe shall be laid to the line and grade shown on the drawings. Unless otherwise specified, belled pipe shall be laid with the bells or grooves facing upstream. When precast pipe risers and other similar precast pipe structures are installed before pipe installation, pipe may be installed in the downstream direction with the belled end upstream. Adequate bell clearance in the subgrade/bedding shall be provided.

Concrete cradles or bedding—Pipe to be cradled or bedded on concrete shall be set to the specified line and grade and temporarily supported on precast concrete blocks or wedges until the cradle or bedding concrete is placed. Concrete blocks or wedges used to temporarily support the pipe during placement of bedding or cradle shall be of a class of concrete equal to or stronger than that to be used in the bedding or cradle.

Earth, sand, or gravel bedding—The pipe shall be uniformly bedded throughout its entire length to the depth and in the manner specified on the drawings. The pipe shall be loaded sufficiently during backfilling around the sides to prevent displacement.

4. Joints

Pipe joints shall conform to the details shown on the drawings and shall meet all manufacturer's requirements. Except where unsealed joints are indicated, pipe joints shall be sound and watertight at the pressure specified.

5. Pressure testing

Method 1—Pressure testing of the completed conduit is not required.

Method 2—Before the concrete or earth backfill is placed around the conduit, the conduit shall be tested for leaks in the following manner:

The ends of the conduits shall be plugged and a standpipe with a minimum diameter of 2 inches shall be attached to the upstream plug. The conduit shall be braced at each end to prevent slippage. The conduit and the standpipe shall be filled with water. The water level in the standpipe shall be maintained a minimum of 10 feet above the invert of the upstream end of the conduit for a period of not less than 2 hours. Any leaks shall be repaired and the conduit shall be retested as described. The procedure shall be repeated until the conduit is watertight.

Method 3—Before the concrete or earth backfill is placed around the conduit, the conduit shall be tested at the specified test pressure for a period of at least 2 hours. Any leaks shall be repaired, and the conduit shall be retested. The procedure shall be repeated until the conduit is watertight.

Method 4—Before the concrete or earth backfill is placed around the conduit joint to be tested, the joint shall be tested in accordance to ASTM C 1103, Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines. Any joints showing leaks shall be relaid or repaired, and the joint shall be retested. The procedure shall be repeated until the joint passes the test.

For methods 2, 3, and 4, the pipe joints shall show no leakage. Damp spots developing on the surface of the pipe are not considered leaks.

6. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe is determined to the nearest 0.1 foot by measurement of the laid length along the invert centerline of the conduit. Payment for each kind, size, and class of pipe is made at the contract unit price for that kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe complete in place.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of pipe is determined as the sum of the nominal laying lengths of the sections used. Payment for each kind, size, and class of pipe is determined as the sum of the nominal laying lengths of the sections used. Payment for each kind, size, and class of pipe is made at the contract unit price for that kind, size, and class. Such payment constitutes full compensation for furnishing, transporting, and installing the pipe complete in place.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the

items to which they are made subsidiary are identified in section 11 of this specification.

7. Items of work and construction details