



**DEVELOPMENTAL SPECIFICATIONS
FOR
SLIPLINING EXISTING PIPE CULVERTS**

**Effective Date
December 20, 2005**

THE STANDARD SPECIFICATIONS, SERIES 2001, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

01071.01 DESCRIPTION.

The Contractor shall furnish and install liner pipe at locations specified in the contract documents.

01071.02 MATERIALS.

- A.** Liner pipe shall meet the material requirements for the type of pipe specified.
1. Solid wall HDPE pipe with integral joint.
 - a. ASTM F 714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter. O.D. tolerances shall be +/- 0.60%.
 - b. ASTM D 3350 Polyethylene Plastics Pipe and Fittings Materials. PE cell classification 334433C or higher or Type III, Class C, Category 5, grade PE 34 will both assure pipe grade, UV protection Class C-2% minimum carbon black.
 2. Profile wall HDPE pipe with integral joint.
 - a. ASTM F 894, Polyethylene (PE) Plastic Pipe. Based on Outside Diameter. O.D. tolerances should be +/- 0.60%.
 - b. ASTM D 3350, Polyethylene Plastics Pipe and Fittings Materials. PE cell classification 334433C or higher or Type III, Class C, Category 5, grade PE 34 will both assure pipe grade, UV protection Class C-2% minimum carbon black.
 - c. Minimum pipe stiffness in accordance with ASTM D 2412 shall be 46 psi (317 kPa).
 3. Profile wall Spirally Wound PVC pipe with integral joint.
 - a. Conform to ASTM F 949, minimum pipe stiffness, 46 psi (317 kPa).
 4. Profile wall PVC pipe with integral joint.
 - a. ASTM F 949, PVC Corrugated Sewer Pipe with A Smooth Interior and Fittings.

- b. ASTM D 1784, Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds. PVC minimum cell classification 12454 B.

5. Corrugated Steel Pipe.

- a. ASTM A 760, Corrugated Steel Pipe, Metallic-Coated, For Sewers and Drains.
- b. Corrugated Steel Pipe shall meet the requirements of Article 4141.02 of the Standard Specifications.
- c. Corrugated Steel Pipe gauges shall meet the requirements of Standard Road Plan RF-32 or RF-33.

6. Flowable Mortar.

- a. Section 2506 shall apply.

B. PIPE CONNECTIONS.

The liner pipe shall be capable of being joined into a continuous length. The joint shall be adequate for pushing or pulling the liner pipe through the host culvert.

C. PIPE DIMENSION TABLE.

Nominal Pipe Size, in. (mm)	Profile Wall HDPE O.D., in. (mm)	Profile Wall HDPE I.D., in. (mm)	Solid Wall HDPE O.D., in. (mm)	Solid Wall HDPE I.D., in. (mm)	Spirally Wound PCV Pipe O.D., in. (mm)	Spirally Wound PVC Pipe I.D., in. (mm)	Profile Wall PVC O.D., in. (mm)	Profile Wall PVC I.D., in. (mm)	CSP Nominal Size., in. (mm)
24 (600)	20.24 (514.1)	18.00 (457.2)	22.00 (558.8)	20.65 (524.5)	20.45 (519.4)	20.00 (508.0)	22.60 (574.0)	20.70 (525.8)	21 (525)
30 (750)	27.06 (687.3)	24.00 (609.6)	28.00 (711.2)	26.29 (667.8)	27.45 (697.2)	27.00 (685.8)	25.60 (650.2)	23.50 (596.9)	27 (675)
36 (900)	33.82 (859.0)	30.00 (762.0)	32.00 (812.8)	30.03 (762.8)	32.79 (832.9)	32.00 (812.8)	32.20 (817.9)	29.50 (749.3)	30 (750)
42 (1050)	40.65 (1032.5)	36.00 (914.4)	40.00 (1016.0)	36.95 (938.5)	38.79 (985.3)	38.00 (965.2)	38.70 (983.0)	35.50 (901.7)	36 (900)
48 (1200)	45.20 (1148.1)	40.00 (1016.0)	42.00 (1066.8)	39.42 (1001.3)	42.79 (1086.9)	42.00 (1066.8)	---	---	42 (1050)
54 (1350)	47.47 (1205.7)	42.00 (1066.8)	48.00 (1219.2)	44.33 (1126.0)	48.79 (1239.3)	48.00 (1219.2)	---	---	48 (1200)
60 (1500)	---	---	54.00 (1371.6)	50.68 (1287.3)	54.79 (1391.7)	54.00 (1371.6)	---	---	54 (1350)
66 (1650)	---	---	---	---	---	---	---	---	60 (1500)
72 (1800)	---	---	---	---	---	---	---	---	66 (1650)
78 (1950)	---	---	---	---	---	---	---	---	72 (1800)
84 (2100)	---	---	---	---	---	---	---	---	78 (1950)
90 (2250)	---	---	---	---	---	---	---	---	84 (2100)
96 (2400)	---	---	---	---	---	---	---	---	90 (2250)

01071.03 INSTALLATION.

Prior to sliplining, the Contractor shall clean the existing pipe of obstructions, solids, etc., that will prevent the insertion of the liner.

The liner pipe shall be held down to create the minimum change in flowline, especially on the inlet end. An example of this would entail attaching a block to the top of the liner pipe, or adding weight to the invert to resist floatation during backfilling with flowable mortar.

Flowable mortar shall be utilized to fill all voids between the liner pipe and the host culvert. Staged grouting is recommended. The Contractor shall be responsible to ensure that all voids between the liner pipe and host pipe have been filled with flowable mortar by providing 2 foot (0.6 m) of head when filling.

01071.04 METHOD OF MEASUREMENT.

A. Slipliner.

The quantity of Sliplining Existing Culverts, in feet (meters), will be quantity shown in the contract documents, for each culvert measured to the nearest foot (meter).

B. Flowable Mortar

Article 2506.08 of the Standard Specifications shall apply.

01071.05 BASIS OF PAYMENT.

A. Sliplining Existing Culverts.

The Contractor will be paid the contract unit price per lineal foot (meter) for Sliplining Existing Culverts. This price shall include all costs to inspect and clean the host culvert and all labor, equipment, and materials for sliplining and blocking the liner pipe into the host culvert.

B. Flowable Mortar.

Article 2506.09 of the Standard Specifications shall apply.