



**DEVELOPMENTAL SPECIFICATIONS  
FOR  
SLIPLINING EXISTING PIPE CULVERTS**

**Effective Date  
October 17, 2023**

**THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**23028.01 DESCRIPTION.**

Furnish and install liner pipe at locations specified in the contract documents.

**23028.02 MATERIALS.**

- A.** Furnish liner pipe meeting the material requirements for the type of pipe specified.
- 1. Solid Wall HDPE Pipe with Integral Joint.**  
Comply with requirements of ASTM F 714 (SDR 32.5) and ASTM D 3350 (cell classification 334433C or higher).
  - 2. Profile Wall HDPE Pipe with Integral Joint.**  
Comply with requirements of ASTM F 894, ASTM D 2412 (minimum RSC of 160 at 3% deflection), and ASTM D 3350 (cell classification 334433C or higher).
  - 3. Profile Machine Spiral Wound PVC Pipe with Integral Joint.**  
Comply with requirements of ASTM F 1697 and provide a pipe stiffness as defined in ASTM F 1741 using a safety factor of 2.0.
  - 4. Profile Wall PVC Pipe with Integral Joint.**  
Comply with requirements of ASTM F 949 or F 1803.
  - 5. Corrugated Steel Pipe (CSP).**  
Comply with requirements of [Article 4141.02](#) of the Standard Specifications and Standard Road Plan [DR-104](#).
  - 6. Polypropylene Pipe (PP).**  
Comply with requirements of ASTM F 2764 or F 2736.
  - 7. Steel Reinforced Polyethylene (SRPE)**  
Comply with requirements of ASTM F 2562, Class 1.

**B. Pipe Connections.**

Use liner pipe capable of being joined into a continuous length. Ensure joints are adequate for pushing or pulling the liner pipe through the existing pipe.

**C. Pipe Dimension Table.**

Use liner pipe meeting dimensions as shown in Table DS-23028.02-1. Verify there is enough clearance in existing pipe to ensure adequate room for liner pipe installation (based on manufacturer's dimensions) and grouting.

**Table DS-23028.02-1: Liner Pipe Size**

Existing Pipe, Nominal Size, Inches	Liner Pipe, Nominal Size, Inches						
	Profile Wall HDPE <sup>(a)</sup>	Solid Wall HDPE <sup>(b)</sup>	Profile Spiral Wound PVC <sup>(a)</sup>	Profile Wall PVC <sup>(a)</sup>	CSP <sup>(a)</sup>	PP <sup>(a)</sup>	SRPE <sup>(a)</sup>
24	18	22	19	18	21	18	-
30	24	28	25	24	27	24	-
36	30	32	30	30	30	30	30
42	36	36	36	36	36	36	36
48	40	42	42	42	42	42	42
54	42	48	48	48	48	--	48
60	48	54	54	54	54	48	54
66	54	--	60	--	60	--	60
72	60	63	66	60	66	60	66
78	66	--	69	--	72	--	72
84	72	--	--	--	78	--	72
90	--	--	--	--	84	--	84
96	--	--	--	--	90	--	-

(a) ASTM or AASHTO standard nominal size is based on inside diameter.

(b) ASTM standard nominal size is based on outside diameter.

**D. Annular Space Grouting**

Use foamed cellular concrete meeting the requirements of [Section 2506](#) of the Standard Specifications. Alternate Mix Designs are allowed when quantity for annular space grouting is estimated to be less than 10 cubic yards for the contract.

**23028.03 CONSTRUCTION.**

- A. Prior to sliplining, clean the existing pipe of obstructions or debris that will prevent the insertion of the liner.
- B. Secure the liner pipe to prevent floating during grouting and ensure minimum change in flowline, especially on the inlet end.
- C. **Annular Space Grouting.**  
Comply with construction requirements in [Section 2506](#) of the Standard Specifications.

**23028.04 METHOD OF MEASUREMENT.**

Measurement for Sliplining Existing Culverts will be the linear feet shown in the contract documents for each culvert.

**23028.05 BASIS OF PAYMENT.**

Payment per linear foot includes all costs to inspect and clean the existing culvert and all labor, equipment, and materials for sliplining, securing the liner pipe in the existing culvert, and annular space

grouting. If Contractor demonstrates the grouting is greater than 120% of the estimated amount to fill the annular space, the grouting volume greater than 120% of the estimate will be paid for as extra work as provided in [Article 1109.03, B](#) of the Standard Specifications.