SPECIAL PROVISIONS
FOR
SLIPLINING EXISTING PIPE CULVERTS

Linn County
IMN-380-6(296)0--0E-52

Effective Date
January 17, 2018

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

150376a.01 DESCRIPTION.

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

150376a.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 F714 (SDR 32.5) and ASTM D3350 (cell classification 334433C or higher).

2. **Profile Wall HDPE Pipe with Integral Joint.**
   Comply with requirements of ASTM F894, ASTM D2412 (minimum RSC of 160 at 3% deflection), and ASTM D3350 (cell classification 334433C or higher).

3. **Profile Wall PVC Pipe with Integral Joint.**
   Comply with requirements of ASTM F949 or F1803.

4. **Polypropylene Pipe (PP).**
   Comply with requirements of ASTM F2764 or F2736.

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 1. However, verify there is enough clearance in existing pipe to ensure adequate room for liner pipe installation (based on manufacturer's dimensions) and grouting.

Table 1: Pipe Dimension.

Existing Pipe, Nominal Size, Inches	Liner Pipe, Nominal Size, Inches			
	Profile Wall HDPE	Solid Wall HDPE	Profile Wall PVC	PP
15	12	12.75	12	12
24	19.5	22	21	18
30	24	28	27	24
36	30	32	30	30
42	36	40	36	36
48	40	42	42	42
54	42	48	48	--
60	48	54	--	48

D. Annular Space Grouting.

Use foamed cellular grout with a minimum compressive strength of 100 psi. If no water is present within the annular space, use low density grout with a minimum of 30 pounds per cubic foot. If water is present in the annular space or pipe cannot be dewatered, use a high density grout with a minimum of 70 pounds per cubic foot, which may include approved sand. The foaming agent shall meet requirements of ASTM C869 when tested in accordance with ASTM C796. Submit mix design to the District Materials Engineer, including test results for base cement slurry mix per cubic yard, expansion factor from the foaming agent, and wet density.

150376a.03 CONSTRUCTION.

A. Prior to sliplining, clean the existing pipe of obstructions or debris that will prevent the insertion of the liner pipe.

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.

1. Construct bulkheads at each end of the pipe. Ensure bulkhead is constructed to withstand pressure of grouting operation.

2. Use grouting pressures to ensure all voids between the liner pipe and existing pipe have been filled, but do not collapse or deform the liner pipe by more than 5% of the diameter. Multiple grout lifts may be necessary for 60 inch and larger pipe diameter in accordance with pipe manufacturer's recommendations.

3. Determine and record wet density at the beginning of the placement and a minimum of once every two hours and provide results to the Engineer.

4. If grout holes are utilized, insert cylindrical wood plugs, or other approved plugs, until the grout has set. Fill holes with concrete after plugs have been removed.

150376a.04 METHOD OF MEASUREMENT.

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

150376a.05 BASIS OF PAYMENT.

Payment for Sliplining Existing Culverts 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 the 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.