

1. SLIP LINING CULVERTS

A. Description. Rehabilitate existing pipe by slip-lining with new pipe. Grout any voids between the host and insert pipe. Pipe diameters are shown on the plans.

B. Materials. Unless noted otherwise, provide an insert pipe of the following materials:

1) Steel Pipe. Provide smooth carbon steel pipe conforming to ASTM A 139, Grade E. Provide electrodes for butt-welded splices that are compatible with the steel pipe material. Butt weld field splices in accordance with AWWA C206.

C. Construction.

1) Cleaning

a) Description. Remove all extraneous material from existing culvert barrels and pipes. If baffles are present in the existing pipe, remove the baffles prior to the installation of the liner pipe.

b) Work Methods. Expose all inside surfaces of the specified culverts. Do not move or damage the culvert. Dispose of material in accordance with federal, state, and local regulations. Place on roadway slopes when approved.

c) Measurement. This Item will be measured by each complete culvert cleaned regardless of the number of barrels or pipes at each location or by the cubic yard. If measurement is by the cubic yard, the volume of material to be removed will be computed by the method of average end areas in its original position.

d) Payment. The work performed in accordance with this Item and measured as provided under "Measurement" will be included in the cost of the culvert lining.

2) By-Passing. When required, provide for flow of water around the structure or structures that are to be lined. Use a pump and by-pass liners of adequate capacity to handle the flow. Payment for by-passing drainage during the construction operation by approved measures will not be paid for directly but will be subsidiary to the bid items of the Contract.

3) Pipe Splicing.

a) Butt-weld steel pipe in accordance with AWWA C206. Make or assemble splices and connections outside of the host pipe to allow for inspection before inserting the lining pipe. Insert new pipe sections into the host pipe or box without damaging the liner pipe.

4) Inserting Liner Pipe.

a) For the culvert crossing located at Station 267+82, remove the existing baffles from the culvert prior to installation of the liner pipe.

b) Excavate suitable trenches for connecting and inserting pipe sections if the grade at the end of the host pipe is below the ground surface. Support assembled sections of pipe as necessary to ensure integrity of the connections while making the connections and inserting the pipe. Do not interfere with the operation of any street, highway, railroad, or other facility and do not weaken any embankment or structure. Insert liner pipe in a manner that does not damage the liner or the host pipe or box culvert. Ensure that the grade of the original host pipe or culvert is maintained.

5) Inserting Internal Energy Dissipation Rings.

a) Weld the internal dissipator rings onto the liner pipe at the locations and spacing shown in the plans.

6) Pipe Stockpiling and Handling.

a) Stockpile pipe and fittings at staging areas or pit locations arranged to cause minimal interference with pedestrians and located outside the clear zone for vehicular traffic. Avoid damaging the liner pipe when assembling and inserting. Pipe with deep cuts, scratches, or gouges shall be rejected or replaced at no expense to the Department. Pipe found to have developed an irregular shape that will not allow pipe joining or insertion without the use of outside forces to bring pipe to round shape, will be rejected and replaced at no expense to the Department.

7) Grouting.

a) Grout all voids between the host pipe or box culvert and the liner pipe. Submit for approval a detailed grouting plan, including provisions for holding the liner pipe in position and maintaining the flowline, before starting grouting operations. Take corrective action if the insert pipe shifts or moves at no expense to the Department. Provide bulkheads at each open end of a pipe run. Pump grout or flowable fill from the one pipe end to completely fill the voids at a pressure low enough to fill the voids without distorting the liner pipe. Do not penetrate the host or liner pipe for grouting without prior approval. Provide an open-ended, high point tap or equivalent vent at the discharge bulkhead.

D. Measurement. This item will be measured by lump sum per location of culvert. For locations with multiple culverts to be lined, the lump sum measurement will include both existing barrels at that location.

E. Payment. The work performed and the materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for as the unit bid as outlined in the following table. This price shall be full compensation for cleaning existing pipe; for furnishing, hauling, installing liner pipe and placing grout, all connections and for all labor, tools equipment, materials, clean-up and incidentals.

TABLE 3: BID ITEM SUMMARY

Bid Item	Unit	Quantity	Description/Location
Miscellaneous Items A – LS	Lump Sum	1	Sta. 139+15 Existing 48"x166' CSP
Miscellaneous Items B - LS	Lump Sum	1	Sta. 180+54 Existing 48"x340' CSP
Miscellaneous Items C - LS	Lump Sum	1	Sta. 267+82 Existing 108"x528' SSPP
Miscellaneous Items D - LS	Lump Sum	1	Sta. 428+71 Existing 48"x194' CSP