

ITEM 602.9001 02 - LINING EXISTING CULVERT WITH CORRUGATED METAL BOX CULVERT SUPERSTRUCTURE

DESCRIPTION

Under this item, the Contractor shall furnish, assemble and install a corrugated metal box culvert as a lining for structures and culverts in accordance with this specification and the contract documents. All pertinent provisions of Section 602 shall apply except as indicated in this specification.

MATERIALS

Materials shall meet the following specifications:

Portland Cement	701-01, 701-03
Mortar/Grout Sand	703-03, 703-04
Corrugated Structural Steel Plate for Pipe, Pipe Arches and Underpasses	707-09
Corrugated Aluminum Structural Plate for Pipe and Pipe Arches	707-14
Anchor Bolts for Corrugated Culverts	707-20
Zinc Chromatic Primer	708-04
Water	712-01

CONSTRUCTION DETAILS

The Contractor shall provide the Engineer with written details of how the work is to be progressed a minimum of 10 days prior to starting. Include pipe manufacturer's instructions, dewatering details, erection drawings, necessary insertion and bracing methods, and a Level 1 Load Rating Analysis performed by a NYS Licensed Professional Engineer certifying an Inventory and Operating Load Rating greater than or equal to that required by a MS-23 Load Rating. All drawings shall be submitted in accordance with Subsections 202.3, 202.5, and 202.10 of the New York State Steel Construction Manual and shall be in SI units. Should the Engineer not approve the Contractor's submission, the Contractor shall be required to resubmit the drawings with appropriate changes or corrections. This resubmission shall not entitle the contractor to an extension of time, as allowed for by Subsection 108-4 of the Standard Specifications. The Engineer will review these submittals in accordance with Subsection 105-16 of the Standard Specifications.

The Contractor shall also be responsible for: Dewatering, cleaning and inspecting the existing pipe or concrete box. Determining the location of and removing obstructions that may prevent proper installation of the liner. Providing strutting and bracing as required to insure the stability of the existing structure.

All elements of the structure shall be handled and assembled in accordance with subsection 603-3.02B, E (excluding geotextile), G and the manufacturer's instructions, except as modified herein, on the plans, or by the Engineer in writing.

The Contractor shall maintain the shape of the structure during all stages of assembly and grout backfilling operation. The Contractor will be responsible for any bracing of the box culvert as necessary such that it maintains the required line and grade during backfilling of the annular space. The requirements of Subsection 603-3.05 Field Strutting of Corrugated and Structural

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Plate Pipe shall apply. In order to prevent distortion and maintain structure shape within specified limits, the following methods or combination of methods may be used:

1. Field strutting and shoring
2. Sequencing of grouting

The Contractor and Engineer shall meet with the manufacturer's representative prior to assembly of the corrugated box culvert shell and prior to grout placement.

Fill the entire annular space. Provide a minimum annular space of 75 mm for fill material between the new and existing structures, and details on how to hold the liner pipe to line and grade until the fill material has set. The Contractor shall design the fill material for the annular space between the existing and new liner pipe in accordance with the metal box culvert Manufacturer's recommendations. To facilitate the grouting of the annular space, external grout tubes, and /or grout holes and fittings in the box culvert will be used. Procedures for grouting will be as recommended by the manufacturer and approved by the Engineer. Plugs shall be inserted into a grout fitting after the grouting operation is complete at that location. Grout fittings shall be compatible with the plugs and grout delivering equipment. If the actual fill material used is less than the anticipated (calculated) fill or an inspection of the relined culvert indicates that there are voids in the annular space, the Contractor must provide the EIC with a plan to correct voids found. The voids must be filled to the satisfaction of the Engineer at no additional cost to the state.

If an aluminum box culvert is used, thoroughly coat the exterior, and any surfaces in contact with cementitious materials, with zinc chromatic primer. Repairs of damaged zinc chromatic coatings shall be made in accordance with written procedures of the Materials Bureau.

The requirements of Subsection 603-3.04A, Damaged Pipe and Repair - General, of the Standard Specifications shall apply.

The Contractor may submit an alternate size liner than called for in the plans for approval by the Engineer. If the proposed alternate size meets the following criteria it will be approved by the Engineer. Insure it will fit into the opening and maintains similar hydraulic capacity, sufficient strength for soil and traffic loading to MS23.

METHOD OF MEASUREMENT

Corrugated structural box culvert shell shall be measured in meters along the centerline of the structure as designated on the plans and specifications or where directed by the Engineer in writing.

BASIS OF PAYMENT

The unit price bid per meter shall include the cost of furnishing all labor, materials, and equipment necessary to manufacture and install the corrugated box culvert including: cleaning, inspecting, strutting, bracing, installing grout holes, plugs, fittings, grouting and damaged pipe repairs. The price bid shall also include the cost of supplying the manufacturer's representative on site during construction.