

SECTION 58

PRECAST CONCRETE BOX CULVERT

58.1 DESCRIPTION

A. General

This work consists of furnishing and installing Pre-cast Concrete Box Culverts.

B. Related Work

Section 51	Structure Excavation for Box Culverts
Section 52	Box, Pipe, and Plate Culvert Undercutting
Section 53	Drainage Fabric Protection for Reinforced Concrete Box Culverts
Section 54	Pipe Culverts
Section 108	Concrete Curing Materials
Section 200	Controlled Low strength Material-(Flowable-Fill)
Section 202	Engineering Fabric

58.2 MATERIALS

Pre-cast Concrete Box Culvert materials design and fabrication shall conform to the requirements of AASHTO M 259 or M 273, except as modified on the plans and by this Specification. Configurations in variance with those provided by AASHTO will be accepted provided the AASHTO materials, design and fabrication specification requirements and requirements of this Specification are complied with.

- A. End Section (inlet or outlet) materials, design and fabrication shall conform to the requirements of AASHTO Standard Specifications for Highway Bridges and Materials Specifications.
- B. Drainage Fabric shall conform to the requirements of Section [202110](#).
- C. Polyethylene Sheeting shall conform to the requirements of Section 108.
- D. Steel wire bar supports, in contact with the casting forms, shall be stainless steel, hot dipped galvanized or plastic tipped extending at least one-half (1/2) inch from the form surface.

58.3 CONSTRUCTION REQUIREMENTS

A. Design

1. Pre-cast Box Culverts shall be designed to satisfy load conditions shown on the plans.

The design shall conform to the AASHTO design requirements for the depth of fill, including surfacing, etc., as well as live load or loading indicated on the plans. The specified live load shall apply to all barrel sections.

2. Prior to fabrication of box culvert sections, the Contractor shall furnish, for Engineering Division review, shop drawings and a checked design. The drawings shall be complete and comprehensive and show all reinforcing steel, its placement, configuration, and total quantities for the complete structure.

A checked design for barrel sections will not be required to be submitted if the proposed fabrication dimensions and reinforcement conform to AASHTO M 259 or M 273. A checked design for end sections will be required.

B. Fabrication

1. The minimum length of pre-cast sections shall be four (4) feet.
2. Joint ties as detailed on the plans shall be provided on all sections.
3. Steel wire bar supports shall be used to maintain proper reinforcement location and concrete cover. Cutting of reinforcement and bending to the form surface, for support, will not be permitted.
4. Welding of reinforcing steel will not be permitted.

C. Installation

1. Foundation preparation shall be in accordance with Sections 51, 52, and 54.
2. The foundation shall be shaped to provide the template section and uniform density, satisfactory to the Engineer.
3. The floor joint between adjacent sections shall be sealed with pre-formed mastic. A strip of drainage fabric shall be placed along the wall and sides to provide a minimum of two and one-half (2 1/2) feet of fabric centered on the joint. Where required, transverse joints in the fabric shall be accomplished by overlapping the fabric at least two (2) feet. Polyethylene sheeting shall be placed between the fabric and the pre-cast box culvert. Sufficient adhesive will be permitted along the edge of the fabric and polyethylene sheeting to hold it in place during backfilling. Lift holes shall be covered or plugged.
4. Each section shall be tied to adjacent sections with joint ties as detailed on the plans.

5. Backfilling shall conform to the requirements of Section 54. Hand compaction methods or use of flowable fill may be required for satisfactory compaction under and adjacent to corners with a radius and between culverts on multiple installations.

D, Precast Concrete Box Culvert Tests:

1. General: A visual inspection and/or a television inspection test shall be performed as specified herein for all precast concrete box culvert(s) (box culvert(s)) as a condition of acceptance by the City. The Engineer shall determine whether a visual test or television test or both tests will be required. All tests shall be performed after backfill is complete but prior to any surface restoration.
2. Pre-Cleaning: Prior to testing newly installed precast concrete box culverts the Contractor shall remove all accumulated construction debris, rock, gravel, sand, silt, and other foreign matter from the precast concrete box culvert.

The Contractor shall be responsible for all work necessary to make the precast concrete box culvert acceptable for usage including removal of all mud, silt, rocks, or blockages that make said box culverts unacceptable for final acceptance and usage. Also included is all cleanup work required prior to final acceptance.

The City will not be responsible for cleaning box culverts prior to the visual inspection and televising the box culvert. In the event that the box culvert is not acceptable for visual inspection or televising, due to the Contractor's operations, the Contractor will be notified. It will be the Contractor's responsibility to arrange to clean the box culvert and make it acceptable for the visual inspection or television work. If not cleaned in a timely manner, the City may cause to take any actions necessary and charge the Contractor one and a half (1½) times the cost incurred.

3. Tests: All newly installed box culverts shall pass a visual inspection by the Engineer and/or a television inspection by the City Utility Maintenance Division. The visual and/or television inspection shall consist of viewing the inside of all box culverts installed to determine proper alignment, grade, joining, etc. The Contractor shall correct, at his own expense, any defects discovered from the visual and/or televising inspection.

A visual and/or television inspection shall be completed unless specified otherwise in the Detailed Specifications or on the Drawings. Waiving the visual and/or television inspections shall only be done in writing by the Engineer and will only be considered if requested by the design engineer.

The expense of the initial visual and/or television inspection and one additional reinspection will be borne entirely by the City. If defective workmanship of material or construction is noted, the Contractor at no expense to the City, shall

correct the deficiency. The City will perform additional visual and/or television inspections to review if the repairs were made properly and in accordance with the specifications. The expense of any additional visual and/or television inspections beyond the initial inspection and one additional reinspection will be borne entirely by the Contractor. The Contractor shall be responsible for all related costs, including concrete or asphalt resurfacing if the street has been surfaced. The Contractor shall be required to repair all deficiencies. The City may cause to take any actions necessary for any items not completed or repaired in a timely manner and may charge the contractor one and a half (1½) times the costs incurred.

It is the Contractors responsibilities to notify both the Engineer/City Inspector and Utility Maintenance that the box culvert is ready for inspection. From the time initial notification that the box culvert is ready to be inspected the Contractor shall allow the City at least four (4) weeks to perform the visual and/or television inspections. Any surfacing started prior to visual and/or televising the box culvert and said box culvert being accepted is at the Contractors own risk.

58.4 METHOD OF MEASUREMENT

A. Furnishing Pre-cast Box Culvert

Furnishing pre-cast box culverts will be measured by the linear foot of box culvert furnished and accepted, excluding end sections. The footage shall be obtained by multiplying the nominal length of the sections by the number of sections furnished and accepted and rounding to the nearest whole foot.

B. Installing Pre-cast Box Culvert

Installing pre-cast box culvert will be measured by the linear foot. The footage shall be obtained by multiplying the nominal length of sections by the number installed.

C. Furnishing Pre-cast Box Culvert End Sections

Furnishing pre-cast box culvert end sections will be measured per each of end sections furnished and accepted.

D. Installing Pre-cast Box Culvert End Sections

Installing pre-cast box culvert end sections will be measured per each of end sections installed and accepted.

58.5 BASIS OF PAYMENT

A. Furnishing Pre-cast Box Culvert

Furnish pre-cast box culvert will be paid for at the contract unit price per linear foot to the nearest whole foot of pre-cast box culvert furnished and accepted.

Payment for this item will be full compensation for furnishing the box culvert, joint seal mastic, drainage fabric, polyethylene sheeting, and joint ties.

B. Installing Pre-cast Box Culvert

Installing pre-cast box culvert will be paid for at the contract price per linear foot to the nearest whole foot of pre-cast box culvert installed and accepted.

Payment for this item will be full compensation for pre-cast box culvert installation and will include compensation for foundation preparation, backfilling, testing, and all other work incidental to the installation.

C. Furnishing Pre-cast Box Culvert End Sections

Furnishing pre-cast box culvert end sections will be paid for at the contract unit price for each end section accepted.

D. Installing Pre-cast Box Culvert End Sections

Installing pre-cast box culvert end sections will be paid for at the contract unit price for each end section accepted.

END OF SECTION