

ITEM 07603.97YY M - PRECAST CONCRETE WINGWALL UNITS FOR BOX CULVERTS

DESCRIPTION. The work shall consist of designing, fabricating, and installing precast reinforced portland cement concrete (p.c.c.) wingwall units with footing, at the locations indicated on the plans.

MATERIALS. The Materials Requirements contained in § 706-17 Precast Concrete Box Culverts shall apply except as noted herein.

Fabrication. The Fabrication requirements contained in §706-17 shall apply, with the following modifications:

1. Design. When the contract plans contain complete design details for the wingwalls, alternate designs will not be considered. When the contract plans do not contain complete design details for the wingwalls the contractor shall be responsible for providing them.

All wingwall designs shall be submitted by the contractor, to the Department, for approval. The processing, approval and transmittal of wingwall designs will be in accordance with procedural directives of the Materials Bureau. Designs shall be submitted at least 45 days prior to the start of fabrication and shall include a complete set of working drawings and a complete set of design calculations. The drawings and design calculations shall be stamped by a Professional Engineer licensed, and registered, to practice in New York State. When the contract plans contain a complete design for the wingwalls, working drawings are still required. However, they do not have to be stamped by a Professional Engineer and design calculations are not required.

2. Drawings. Working drawings shall include complete and accurate details for connecting the wingwalls to the precast culvert and between wingwall panels. These details shall agree with those shown on the precast culvert working drawings. The connection between the box culvert and each wingwall shall be designed with a reinforced concrete closure pour. Working drawings, and when required design calculations, shall be submitted to the Department for approval at least 45 days prior to the start of fabrication. The processing, approval and transmittal of working drawings will be in accordance with procedural directives of the Materials Bureau.

3. General. The concrete cover over reinforcing steel shall be 38 mm minimum. All reinforcing steel in the wall section of wingwalls shall be epoxy coated or the concrete shall contain corrosion inhibitor in accordance with §706-17. The joints and connections shall be designed such that when fully drawn together the gap between wingwall panels is 20 mm maximum.

4. Dimensional Tolerances. The dimensional tolerances contained in §704-03 shall apply except as noted herein.

- a. The wall thickness shall not vary from the design dimension by more than 5 mm for thicknesses less than 250 mm or 10 mm for thicknesses of 250 mm or greater.
- b. The length of section shall not vary more than 10 mm from the design dimension.

CONSTRUCTION DETAILS

1. Site Preparation - All stream protection, excavation, and drainage work required prior to the installation of the precast units, as indicated on the contract plans, will be done in accordance with the appropriate sections of the Standard Specifications.

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2. Inspection, Storage and Handling - All precast units and installation materials shall be inspected both upon arrival at the construction site and prior to installation to determine any damage during shipment and storage and for conformance to dimensional tolerances.

The contractor shall handle the units with extreme care to prevent damage. Damaged units shall be repaired in a manner approved by the Engineer.

Precast units which can not be repaired or which do not meet dimensional tolerances, as determined by the Engineer, shall be rejected and replaced with acceptable units furnished by the Contractor at no additional cost to the State. Rejection of a unit shall be done only with the concurrence of Director of Materials.

3. Installation of the Structure - The Contractor shall require the precast units' fabricator to provide technical assistance and an on site representative during installation. The Contractor shall provide the Engineer with all facilities necessary to conduct a thorough inspection of all the installation work. Prior to installation, the Contractor shall supply the Engineer with detailed information concerning the proposed method of installation and the construction equipment to be used. No work shall be performed without the Engineer's approval.
 - A. Excavation. The requirements in § 206 Trench, Culvert and Structure Excavation - that apply to walls- shall govern, except as modified in the plans or as directed by the Engineer.
 - B. Bedding. A level bedding surface of subbase gravel shall be placed, compacted and prepared, as shown in the plans.
 - C. Placement. The precast wingwalls shall be installed, true to line and grade, in accordance with the contact plans.
4. Joints - All dowels, joint filler material, tie rods, connectors, waterproofing strips or other sealing materials supplied by the Manufacturer, shall be furnished and installed by the Contractor in accordance with the Manufacturer's directions and as approved by the Engineer. All welding required shall be performed in accordance with the provisions of the New York State Steel Construction Manual.
5. Preparation of All Precast Units (Prior to Backfilling) - The backfilling operations shall not begin until the precast culvert units and precast wingwalls have been placed in their final positions and all mechanical connections and exterior (backfill side) seals have been properly installed. The exterior (backfill side) of the wingwall closure pour shall be formed and backfilled prior to making the actual concrete pour.
6. Backfilling - The precast wall units shall be backfilled as per § 203 - Excavating and Embankment, with the following modifications:
 - a. The backfill shall be placed and compacted in layers not exceeding 300 mm in depth, within the backfill limits.
 - b. The backfill shall be compacted using hand compaction equipment, within 300 mm of the wall.

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- 7. Closure Pour. The connection between the box culvert and each wingwall shall be formed and poured in place, using Class A concrete, as per § 501. The internal mechanical connection and reinforcing bars shall be installed as detailed in the working drawings, prior to the concrete pour.
- 8. Sealing & Grouting. Open joints on the exposed face between precast wingwall units shall be sealed and/or grouted in accordance with the Manufacturer's directions and as approved by the Engineer.

METHOD OF MEASUREMENT. Measurement will be the total linear meters of precast wingwall (with footing) installed, based on the limits shown on the plans.

BASIS OF PAYMENT. The unit price bid shall include the cost of all labor, materials and equipment necessary to complete the work, including the cast-in-place concrete closure pour. Excavation and backfill (including bedding gravel) will be paid for separately, as indicated on the plans or as established in writing by the Engineer.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
07603.97YY M	Precast Concrete Wingwall Units for Box Culverts	Meter

(YY = Average height of wall in meters)

Spec is disapproved
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