

ITEM 603.67000025 - PRECAST CONCRETE WINGWALL UNITS FOR BOX CULVERTS

1. DESCRIPTION:

- 1.01 This work shall consist of furnishing and placing precast reinforced concrete wingwall units (wingwall stem and footing) in accordance with these specifications in the locations indicated and in a manner approved by the Engineer.

2. MATERIALS:

- 2.01 Precast concrete wingwall units shall meet the requirements of [REDACTED] except as noted herein.
- 2.02 **Design.** When the contract plans contain complete design details for the precast concrete wingwall units, alternate designs will not be considered. When the contract plans do not contain complete design details for the wingwall, the contractor shall be responsible for providing them.
- 2.03 **Galvanizing.** The bar reinforcement shall be class 1 galvanized after bar fabrication, in accordance with [REDACTED]
- 2.04 **Miscellaneous Hardware.** Chairs, tie wires, nuts, bolts, washers, other devices, and miscellaneous hardware used to support, position, or fasten the reinforcement shall be made of or coated with, a non-conducting material, or galvanized. The specific hardware that the Contractor proposes to use shall be approved by the Engineer. If the specific hardware is galvanized, the hardware shall be prepared and galvanized in accordance with the requirements of both [REDACTED].
- 2.05 **Mechanical Connectors.** Mechanical connectors used for galvanized bar reinforcement shall be galvanized in accordance with the requirements of [REDACTED] prior to installation.

The thread shall be tapped oversize prior to being coated per Subsection [REDACTED]

The assembled connection on the galvanized reinforcing bars shall have no exposed uncoated steel. Any damage to the galvanized coating or uncoated area shall be repaired as indicated in [REDACTED]

The manufacturer of the mechanical connectors shall certify, in writing to the Engineer that the mechanical connectors, with oversize threads (if applicable), meet the following three parameters:

- A. The maximum slip, at [REDACTED] of the reinforcing bar, shall be [REDACTED]
At least [REDACTED] shall have occurred on the first cycle.
- B. The maximum slip, at [REDACTED] of the reinforcing bar, shall be [REDACTED].
- C. The tensile strength of the splice shall be at least [REDACTED]
[REDACTED] of the reinforcing bar.
- 2.06 **Repair Galvanized Coating.** The fabricator shall be required to repair any damage to the galvanized coating done during shipping and handling, and to replace bars exhibiting severely damaged coatings. Repairable damage is defined as any bare or loose spots, or breaks in the coating which affects an area smaller than 4 square inches.

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2. MATERIALS: (cont'd)

Repair shall be allowed only when the total number of repairable damaged areas in any 10 foot length of bar is less than 6. Any material with a total number of damaged areas greater than the amount specified above, or material with any damaged area greater than 4 square inches, shall be rejected, immediately removed and replaced at no cost to the Authority.

2.06 Repair Galvanized Coating (cont'd)

The galvanized coating is to be repaired with a zinc-rich paint by the following method:

1. Clean the damaged area by power disk, wire brushing, sand or grit blasting, or any other suitable method approved by the Engineer to a near-white metal condition in accordance with SSPC-SP10 (1 to 2 mil anchor pattern), as a minimum. The surface shall also be clean, dry and free of oil, grease, flux residue, corrosion products, and any other foreign substance.
2. Using a minimum of two coats, and the methods recommended by the manufacturer of the zinc-rich paint, spray or brush apply the zinc-rich paint to the area in a manner to achieve the applicable ASTM adherence and quality requirements of the original coating, and a minimum dry film thickness of 4 mils.

All repairs shall be made at no cost to the Authority.

3. CONSTRUCTION DETAILS:

3.01 Inspection, Storage and Handling: Precast concrete wingwall units will be inspected at the construction site to determine any damage during shipment and for conformance to the dimensional tolerances. An additional inspection will be made prior to placement of wingwall units to determine if any damage occurred during storage.

3.02 Installation:

- A. **Excavation:** The requirements specified in Section 206, Trench, Culvert and Structure Excavation, that apply to structures shall govern, except as modified in the plans or as directed by the Engineer.
- B. **Placement:** The precast manufacturer shall have a representative available to assist in the installation of the precast concrete wingwall units. Wingwalls shall be installed, true to line and grade, in accordance with the contract plans.
- C. **Closure Pour.** The connection between the box culvert and each precast concrete wingwall unit shall be formed and poured in place, using Class A concrete with a minimum compressive strength of 5,000 psi, as per Section 501. Precast concrete wingwall units shall be backfilled prior to placing the closure pour.
- D. **Sealing and Grouting.** Joints between precast concrete wingwall units shall be sealed and or grouted in accordance with the working drawings. Wingwalls shall be backfilled prior to grouting.
- E. **Backfilling.** The types of materials to be used in backfilling and the procedure of placement shall conform to the contract plans and the applicable provisions of Subsection 203-3.15.

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- 3.03 **Repair of Damaged Sections:** Precast concrete wingwall units that are damaged or disturbed through any cause prior to acceptance of the Contract shall be repaired, realigned or replaced as directed by the Engineer and at the Contractor's expense. Precast concrete wingwall units which, as determined by the Engineer, cannot be satisfactorily repaired, or do not meet dimensional tolerances, will be rejected and shall be replaced with acceptable units by the Contractor.

4. METHOD OF MEASUREMENT:

Measurement will be taken as the number of square yards of vertical plane projection of wall installed in accordance with the contract documents inclusive of the footing.

5. BASIS OF PAYMENT:

The unit price bid shall include the cost of furnishing all engineering, labor, materials, equipment and installation supervision by the precast manufacturer's representative, necessary to satisfactorily complete the work. The cost of all excavation and backfill necessary to complete said work, shall be included in the unit price bid.