

SECTION 33 40 04  
**REINFORCED CONCRETE RIPRAP**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This item shall govern the furnishing and placing of riprap of concrete of the type indicated on the plans or specified by the Engineer.

**1.2 MEASUREMENT AND PAYMENT**

- A. Measurement of acceptable riprap complete in place will be made on the basis of the area actually covered.
- B. Concrete in toe walls will be measured as riprap of the type with which it is placed.
- C. The riprap quantities, measured as provided above, will be paid for at the unit prices bid in the Proposal for Reinforced Concrete Riprap, which price will be full compensation for furnishing, hauling, and placing all materials including reinforcement and for all labor, tools, equipment and incidentals necessary to complete the work.
- D. Payment for excavation of toe wall trenches, all necessary excavation below natural ground or bottom of excavated channel, shaping of slopes, will be included in the unit price bid for riprap.
- E. Payment will not be made for unauthorized work.

**1.3 SUBMITTALS**

- A. Concrete Mix Designs
- B. Certification for cement conformance to specification
- C. Test reports for all required concrete tests

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Materials for concrete shall conform to the requirements of SECTION 03 30 00 - CONCRETE. Concrete shall be of the class shown on the plans unless otherwise specified by the Engineer.

**2.2 TESTING REQUIREMENTS**

As specified in SECTION 03 30 00 - CONCRETE.

## **PART 3 – EXECUTION**

### **3.1 GENERAL**

- A. The slopes and other areas to be protected shall be dressed to the line and grade shown on the plans prior to the placing of riprap. Riprap shall not be placed on embankment slopes until the embankment has been compacted to ninety-eight (98%) percent of Standard Density as specified in A.S.T.M. Designation D-698 or as shown on the plans.
- B. Concrete for riprap shall be placed in accordance with the details and to the dimensions shown on the plans or as established by the Engineer. Concrete riprap shall be reinforced using #4 steel bars spaced at 12 inches on center. Wire reinforcement will not be allowed.
- C. Reinforcement shall be supported properly throughout the placement to maintain its position equidistant from the top and bottom surface of the slab.
- D. If the slopes and bottom of the trench for toe walls are dry and not consolidated properly, the Engineer may require the entire area to be sprinkled, or sprinkled and consolidated before the concrete is placed. All surfaces shall be moist when concrete is placed.
- E. After the concrete has been placed, compacted and shaped to conform to the dimensions shown on the plans, and after it has set sufficiently to avoid slumping, the surface shall be finished with a wooden float to secure a reasonably smooth surface.
- F. Immediately following the finishing operation the riprap shall be cured in accordance with SECTION 03 30 00 - CONCRETE.

**END OF SECTION**