

## **SPECIFICATION SECTION 12950 - STONE RIPRAP**

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## **SPECIFICATION SECTION 12950 - STONE RIPRAP**

### **1. DESCRIPTION**

- (a) This Specification Section describes requirements and procedures for the dry Stone Riprap slope protection and construction.
- (b) Slope protection shall be furnished and constructed in accordance with this Specification Section and in conformity with the lines, grades and dimensions shown on the Drawings or required by the Engineer.
- (c) If and when required concrete block slope protection shall be installed at bridge abutments.

### **2. MATERIAL REQUIREMENTS**

Stone for riprap shall consist of fieldstone or quarry stone as nearly rectangular in section as is practical. The ratio of maximum to minimum dimensions shall not exceed 2.5 to 1. The stone shall be sound, tough, durable, dense, resistant to the action of air and water, and suitable in all respects for the purpose intended as indicated on the Drawings or required by the Engineer. Loose stone riprap shall range in weight from a minimum of 2.5kg to a maximum of 100kg with not less than 50 percent of the stones weighing more than 35 kg.

### **3. CONSTRUCTION REQUIREMENTS**

#### **3.1 Preparation of Surfaces**

- (a) Surfaces on which protection is to be placed shall be compacted and properly smoothed after removing all vegetation.
- (b) For slope protection, placing shall not begin until the finishing stakes are set according to the Drawings and have been inspected and approved by the Engineer.

#### **3.2 Placing**

- (a) Stone placed below the water line shall be distributed and compacted so that the thickness of riprap is not less than that specified. Stone placed above the water line shall be placed by hand.
- (b) It shall be laid with close, broken joints and shall be firmly bedded into the slope and against the adjoining stones. the stones shall be laid perpendicular to the slope with ends in contact.
- (c) Smaller stones shall be first laid on the slope and larger stones shall be used as surface cover.

- (d) The riprap shall be thoroughly compacted as construction progresses and the finished surface shall present an even, tight surface, interstices between stones shall be chinked with spalls firmly rammed into place.
- (e) Unless otherwise indicated, riprap shall be at least 50cm in thickness, measured perpendicular to the slope.
- (f) The surface of riprap placed above the water line shall not vary from the theoretical surface by more than 8cm at any point.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 Method of Measurement**

The quantities measured for payment shall be:

- (a) The number of cubic meters of dry stone rip-rap measured in place and incorporated in the completed work in accordance with the Drawings or the approved shop drawings. In computing the quantity for payment of slope protection the height shall be measured along the slope surface and no measurement will be made for the toe key to riprap.
- (b) Only accepted work will be measured for payment and the computation of the quantity thereof will be based on the area within the limiting dimensions designed on the Drawings or required by the Engineer.
- (c) The Stone Riprap provisions, material requirements and construction requirements identified in this Specification Section shall be measured for payment in pay items 12950-01.
- (d) Any Stone Riprap Works not specifically identified in this Specification Section but which are necessary for the performance of the Works shall be deemed to be included in pay items 12950-01.

### **4.2 Basis of Payment**

The work under this Specification Section shall be paid for in accordance with the applicable unit prices as indicated in the Bill of Quantities and given below. Payment shall constitute full compensation for performing the requirements of the Contract for the item of work as specified including furnishing all necessary labor, materials, tools, equipment, incidentals and tests.

| <b><u>Pay Item</u></b> | <b><u>Description</u></b> | <b><u>unit</u></b> |
|------------------------|---------------------------|--------------------|
| <b>12950</b>           | <b>Stone rip-rap</b>      |                    |
| 12950-01               | Stone rip-rap             | m <sup>3</sup>     |