

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

- .1 This section specifies requirements for supply and placing rock scour protection and re-using existing armour stone for erosion protection at locations and to dimensions indicated on drawings or designated by Departmental Representative.

### **1.2 RELATED SECTIONS**

- .1 Section 31 23 25 - Rock and Gravel Fill.
- .2 Section 31 32 21 - Geotextiles.
- .3 Section 31 36 19 - Rock Mattress.

### **1.3 MEASUREMENT FOR PAYMENT**

- .1 Amour Stone Protection: No measurement for payment to made under this section for the re-use and placement of the existing armour stone to the limits indicated on the drawings. Include all costs, including all plant, labour, equipment, and materials required to complete the work as specified in the lump sum price arrangement.
- .2 Rock Scour Protection: Supply and placement of rock scour protection, including the cost of all plant, labour, equipment, and materials required to complete the work as specified, will be measured by the cubic meter (CMPM). The volume of material will be determined in place from measurements taken prior to and at completion of the work.

## **PART 2 - PRODUCTS**

### **2.1 ARMOUR STONE PROTECTION**

- .1 Existing stones to be re-used.

### **2.2 ROCK SCOUR PROTECTION**

- .1 Hard, dense with relative density (specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks or other structural defects.
- .2 Stones to be used as rock scour protection will weigh 200kg (500mm ø), as shown on the drawings.

**PART 2 – PRODUCTS**  
**(CONT'D)**

**2.2 ROCK SCOUR PROTECTION**  
**(CONT'D)**

- .3 Field stones of appropriate sizes are acceptable.

**PART 3 - EXECUTION**

**3.1 PLACING**

- .1 Place armour stone and rock scour protection as directed to thickness and details indicated on drawings or as designated by Departmental Representative.
- .2 Where stones are to be placed on slopes, ensure that fill is placed to the slopes as indicated on the drawings.
- .3 Fine grade area to be protected to uniform even surface. Fill depressions with suitable material and compact to provide firm bed.
- .4 Place stones in manner approved by Departmental Representative to secure surface and a stable mass. Place larger stones at bottom of slopes.
- .5 Hand Placing:
- .1 Use larger stones for lower courses and as headers for subsequent courses.
- .2 Stagger vertical joints and fill voids with rock spalls or cobbles.
- .3 Finish surface evenly, free of large openings and neat in appearance.
- .6 Stones shall be carefully placed to give a thickness perpendicular to slope as indicated on drawings.
- .7 Place stones in locations as shown on the drawings, and in a manner approved by the Departmental Representative.
- .1 Dumping of stones will not be permitted. Each stone will be lifted and individually placed.
- .2 Side slopes to be 1.5 horizontal to 1.0 vertical as indicated on the drawings.
- .3 Place stones to a total layer thickness as indicated on the drawings.
- .4 Contractor will choose his stones and place them in such a way that the whole structure will be bonded and consolidated to as great an extent as nature or rock will allow.

**PART 3 - EXECUTION  
(CONT'D)**

**3.2 TESTING**

- .1 Submit rock materials samples for testing to testing laboratory approved by the Departmental Representative prior to commencement of quarry production. Allow sufficient lead time to perform and report tests before start of production.
- .2 Contractor will be responsible for procurement of samples for testing and arrange and pay for shipment of samples to testing laboratory.
- .3 Departmental Representative will pay for costs associated with laboratory testing of proposed rock materials.
- .4 Only materials satisfactorily tested and approved by the Departmental Representative will be quarried and placed in the work.