

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies requirements for supply and placing stone rip-rap for erosion protection at locations and to dimensions indicated or designated by Departmental Representative.
- 1.2 RELATED SECTIONS .1 Section 31 23 10 - Excavating, Trenching, and Backfilling.
.2 Section 31 23 25 - Rock and Gravel Fill.
- 1.3 MEASUREMENT FOR PAYMENT .1 Rip-Rap: Supply and placement of stone rip-rap, including the cost of all plant, labour, equipment, and materials required to complete the work as specified, will be measured by the cubic metre place measure, (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 RIP-RAP .1 Hard, dense with relative density (formally specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks or other structural defects, to meet following size distribution for use intended.
.1 Random Rip-rap:
.1 Not more than 10% of total volume of stones with individual mass of 50 kg.
.2 Not less than 50% of total volume of stones with individual mass of 110 kg or more.
.3 Remaining percentage of total volume to have uniform distribution of stone between 50 kg and 110 kg. size.

PART 3 - EXECUTION

3.1 PLACING

- .1 Place rip-rap as directed to thickness and details indicated or as designated by Departmental Representative.
- .2 Where rip-rap is to be placed on slopes, excavate trench at toe of slope to dimensions as indicated.
- .3 All side slopes to be one (1) vertical to one and one half (1.5) horizontal.
- .4 Fine grade area to be rip-rapped to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.
- .5 Place stones in manner approved by Departmental Representative to secure surface and create a stable mass. Place larger stones at bottom of slopes.
- .6 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.