

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 25 - Rock and Gravel Fill

PART 2 - PRODUCTS

2.1 MATERIALS .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.
- .2 Rip-rap stone to be well graded and sized as indicated on drawings.
- .3 Supply rock spalls to fill open joints.
- .4 Field stones of appropriate sizes are acceptable for hand placed rip-rap.

PART 3 - EXECUTION

3.1 PLACING .1 Place rip-rap as directed to thickness and details indicated or as designated by Engineer.

- .2 Where rip-rap is to be placed on slopes, excavate trench at toe of slope to provide stability.
- .3 All side slopes to be as shown on drawings.
- .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 Engineer 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.

3.2 TESTING

- .1 Submit rock material samples for testing, to testing laboratory approved by the Engineer.
- .2 Contractor will be responsible for procurement of samples for testing and arrange and pay for shipment of samples to testing laboratory.
- .3 Engineer will pay for costs associated with laboratory testing of proposed rock materials. The cost of retesting due to samples failing to meet the requirements of the contract will be borne by the Contractor.
- .4 Only materials satisfactorily tested and approved by the Engineer will be placed in the work.