

SECTION 917

HYDRAULIC RIP RAP

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917.01 SCOPE

This specification covers the supply, delivery and installation of hydraulic rip rap protective covering placed to protect causeways and structures.

917.02 MATERIALS AND GRADING

The quality of rock must be accepted by the Owner's Representative prior to placement. The Rock supplied for placement must be clean, hard, durable and angular in shape. Field stones and boulders may be used only upon consultation and acceptance with the Owner's Representative.

The rocks supplied shall meet the following requirements:

- a) Have a density of not less than 2.6 t/m³.
- b) When subjected to the Los Angeles Abrasion Test in CSA A23.2 "Test Methods and Standard Practices for Concrete" shall have a loss not greater than 35%.
- c) When tested for soundness according to CSA A23.2-9A, the rock material shall have a loss not greater than 15% after five cycles.

Rip Rap material provided shall have a gradation that conforms to the following (Taken from "Guide to Bridge Hydraulics" published by RTAC):

Class I	Class II	Class III
NOMINAL 300 MM DIAMETER OR 40 KG MASS ALLOWABLE LOCAL VELOCITY UP TO 3 M/SEC. GRADING SPECIFICATION: 100% SMALLER THAN 450 MM OR 130 KG AT LEAST 20% LARGER THAN 350 MM OR 70 KG AT LEAST 50% LARGER THAN 300 MM OR 40 KG AT LEAST 80% LARGER THAN 200 MM OR 10 KG	NOMINAL 500 MM DIAMETER OR 200 KG MASS ALLOWABLE LOCAL VELOCITY UP TO 4 M/SEC. GRADING SPECIFICATION: 100% SMALLER THAN 800 MM OR 700 KG AT LEAST 20% LARGER THAN 600 MM OR 300 KG AT LEAST 50% LARGER THAN 500 MM OR 200 KG AT LEAST 80% LARGER THAN 300 MM OR 40 KG	NOMINAL 800 MM DIAMETER OR 700 KG MASS ALLOWABLE LOCAL VELOCITY UP TO 5 M/SEC. GRADING SPECIFICATION: 100% SMALLER THAN 1200 MM OR 2300 KG AT LEAST 20% LARGER THAN 900 MM OR 1100 KG AT LEAST 50% LARGER THAN 800 MM OR 700 KG AT LEAST 80% LARGER THAN 500 MM OR 200 KG

The class of rip rap to be used will be designated in the contract documents.

Location of a suitable source for the hydraulic rip rap shall be the responsibility of the Contractor.

917.03 PLACING

Where and as directed by the Owner's Representative excavation shall be performed to provide a shelf or ledge to provide adequate foundation for the bottom of the hydraulic rip rap.

Material shall be placed as shown on the plans or as otherwise directed by the Owner's Representative.

Material shall be dumped or craned into position to starting at the bottom of the slope and working upwards. Material must completely cover the area to be protected to the depth specified. The finished surface shall have a uniform appearance, free from depressions or bumps.

The Owner's Representative shall be the final and sole judge of the quantity of hydraulic rip rap required.

917.04 MEASUREMENT FOR PAYMENT

Measurement for payment shall be cubic metres of material placed to the nearest one decimal and only that material placed as directed by the Owner's Representative shall be

accounted for payment. Payment will be in cubic metres as tendered under item "Hydraulic Rip Rap" as listed in the unit price table.

Where measurement is impractical due to placement under water an estimate of that rip rap correctly placed will be made by converting the truck load into cubic metres.

Measurement for any excavation requested by the Owner's Representative will be in accordance with Section 902.

917.05 BASIS OF PAYMENT

Payment at the contract price for "Hydraulic Rip-Rap" in the Unit Price Table shall be full compensation for all labour, materials, and equipment needed to supply and place hydraulic rip rap protection as required under the Contract.