

SPECIFICATIONS FOR PRECAST CONCRETE RIP RAP1084. 1. DESCRIPTION

The work will consist of the supply of materials for precast concrete rip-rap required to complete the work as shown or described or reasonably inferable from the plans and specifications, the trimming of the existing slopes to a uniform slope, the supplying and placing of a sand cushion and the placing of precast concrete rip-rap on bridge slopes, or such other places as may be indicated on the plans or as designated by the Engineer.

1084. 3. SUPPLY OF MATERIALS

3.1 Material to be Supplied by the Contractor:

- (a) Cement which shall conform to the requirements of CSA Standard CAN3-A5 (latest edition).
- (b) Admixtures.
- (c) Aggregates and Water.
Maximum nominal size of coarse aggregate shall be 20 mm. The coarse aggregate shall be graded uniformly and shall have not more than 1% passing a 75 um sieve.

Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongated particles, dust, shale, earth, vegetable matter or other injurious substances.

The fine aggregate shall be graded uniformly and shall have not more than 3% passing a 75 um.

Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains and free from dust, lumps, shale, alkali, organic matter, loam or other deleterious substances.

When the aggregate is subjected to five cycles of the Sulphate Soundness Test, ASTM Designation C 88 (latest edition), the mass percentage of loss shall not be more than 10% when sodium sulphate is used, or 15% when magnesium sulphate is used.
- (d) Reinforcing mesh in accordance with C.S.A. Specification G 30.5 (latest edition).
- (e) Sand for bedding the slabs shall be pit-run, clean sand which passes a 6.7 mm sieve with not more than 5% passing a 75 um sieve.

All material shall be subject to the approval of the Engineer.

1084. 7. CONSTRUCTION METHODS

7.1 Concrete Mix

The concrete mix design shall be such as to provide concrete with a 28 d compressive strength of 30 MPa. The concrete shall have between 3% and 5% entrained air and shall contain a water reducing admixture.

1084. 7. CONSTRUCTION METHODS (Cont'd)

7.1 Concrete Mix (Cont'd)

The method of mixing and placing concrete shall be subject to the approval of the Engineer. The slump shall not exceed to 75 mm and the concrete shall be vibrated thoroughly.

7.2 Reinforcing Mesh

The reinforcing mesh shall be placed at mid-depth of the rip-rap slabs.

7.3 Finish of Rip-Rap Units

- (a) No lifting hooks shall appear on any surface of the slabs.
- (b) The surface of the slabs to be exposed shall be given a smooth steel trowel finish.
- (c) All slabs shall be uniform in appearance. No broken, chipped or otherwise damaged slabs will be accepted.
- (d) For identification purposes, the letters MHD shall be imprinted on both sides of the precast units as shown on the plans. The imprint shall be a minimum 6 mm in depth.

7.4 Preparation of Bed

- (a) The existing slopes shall be trimmed carefully by removing, adding and compacting materials, where necessary, so that the final slope shall form a plane surface with a gradient as specified on the plans.
- (b) A 50 mm thick layer of sand shall be placed on the trimmed slope to act as a bedding cushion and a drainage blanket for the rip-rap slabs.

7.5 Placing of Slabs

- (a) The slabs shall be placed so that they are well seated in the sand cushion.
- (b) Care shall be exercised in placing the slabs so the all vertical and horizontal lines are straight; and the slabs so placed shall provide a uniform, even surface.
- (c) The slabs shall not be placed on frozen slopes.
- (d) The slabs shall be offset horizontally by a half length of the slab so as not to produce continuous vertical joints.

1084. 9. METHOD OF MEASUREMENT

Supplying concrete rip-rap will be measured on a square metre basis. The surface area to be paid for will be the total number of square metres actually placed as computed from measurements taken by the Engineer in the field.

Supplying of materials for the sand cushion will be considered incidental to the Contract Unit Price for "Supplying Precast Concrete Rip-Rap" and no separate measurement will be made for this work.

1084. 9. METHOD OF MEASUREMENT (Cont'd)

Delivery and placing of concrete rip-rap will be measured on a square metre basis. The surface area to be paid for will be the total number of square metres actually delivered and placed, as computed from measurements taken by the Engineer in the field.

Delivery and placing of materials for the sand cushion and the trimming of slopes will be considered incidental to the Contract Unit Price for "Delivery and Placing Precast Concrete Rip-Rap" and no separate measurement will be made for this work.

1084. 11. BASIS OF PAYMENT

Supplying precast concrete rip-rap will be paid for at the Contract Unit Price per square metre for "Supplying Precast Concrete Rip-Rap", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the work included in these Specifications.

Delivery and placing of precast concrete rip-rap will be paid for at the Contract Unit Price per square metre for "Delivery and Placing of Precast Concrete Rip-Rap", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the work included in these Specifications.