

524.30 Temporary Structural Support

Each

## SECTION 525 - GRANITE MASONRY

525.01 Description This work shall consist of furnishing and placing granite pier facing in accordance with these specifications and as shown on the plans.

525.02 Materials The granite shall be obtained from an approved quarry and be free from materials which, by weathering, would cause discoloration or deterioration. The granite for the entire Project shall be uniform in color and free from seams, cracks and other structural defects.

Caulking of joints shall be accomplished with a two-component, epoxy-resin system designed for the intended use. A quartzite aggregate shall be added in accordance with the manufacturer's recommendations. The material shall be moisture insensitive, of low modulus of elasticity, and of a gel-like non-sag viscosity. Color shall be gray. The materials shall be subject to the approval of the Resident.

Anchors shall be of either ASTM A36/A36M steel, galvanized in accordance with AASHTO M111 (ASTM A123), or ASTM A276 Type 304 stainless steel, 19 mm [ $\frac{3}{4}$  in] diameter, as indicated on the plans. Other types of anchors may be used with prior approval of the Resident.

Joint mortar shall comply with Section 705.02 - Joint Mortar, except it shall contain an additive to insure water-tightness. The additive shall not contain a retarding agent or hydrated lime and shall be approved by the Resident.

525.03 General Granite masonry shall have all stones dressed and cut to exact dimensions and laid up in joint mortar, with joints 12.5 mm +/- 3 mm [ $\frac{1}{2}$  in +/- • in] in thickness.

A complete setting plan shall be submitted for approval before ordering any stone.

The arrangement and the length of the stones shall be as approved by the Resident.

525.04 Stones The finish on exposed surfaces of the stones shall be free from tool marks. Irregular projections shall be limited to a maximum of 75 mm [3 in] for any one stone measured from the pitch line. Irregular depressions shall be limited to a maximum of 25 mm [1 in] for any one stone measured from the pitch line.

Stones shall have their edges pitched to a true line with tops and bottom parallel and cut to lie on their natural beds. The top and bottom beds shall be the full size of the stone, and hollow beds shall not be permitted. The beds of stone shall be sawn or fine finished, full depth. The vertical face joints shall be sawn or fine finished for a depth of not less than 102 mm [4 in], with the balance not to fall away more than 102 mm [4 in].

The top layer of granite shall have a 38 mm [1½ in] wide chisel draft line along the top face adjacent to concrete.

All stones shall be so finished that no holes or portions of holes shall show on surfaces that will be exposed in the finished work.

The depth of the stone shall be not less than 203 mm [8 in] and not more than 305 mm [12 in] measured from the back face of the stone to the pitch line. The Contractor shall use extreme care when placing the concrete within the boundaries of the stone facing to avoid causing air pockets due to overhanging stones. Stone heights shall be a minimum of 380 mm [15 in].

525.05 Anchors Holes for anchors shall be drilled in the stones before they are placed.

There shall be a minimum of 2 anchors at a maximum spacing of 1219 mm [48 in] in the top and bottom beds of each piece and grooves shall be cut from the anchor holes to the back of the stones.

Stones greater than 1219 mm [48 in] in height shall have additional anchors located in the back face of the pieces such that there will be a maximum spacing, both vertical and horizontal, of 1219 mm [48 in] between anchors.

Anchors in the top and bottom beds of each stone shall be located such that an anchor will be not greater than 457 mm [18 in] from each end of the piece. Anchors in the back face of each stone shall be located such that an anchor will be not greater than 457 mm [18 in] from each end of the piece.

525.06 Mortar Joint mortar shall be machine mixed for not less than 1½ minutes after all ingredients are in the mixer.

Mortar shall be used within 30 minutes after mixing and the retempering of mortar will not be permitted. The mixing and placing of mortar shall be discontinued when the atmospheric temperature is below 5°C [40°F] in the shade and dropping and shall not be resumed until the atmospheric temperature is as high as 2°C [35°F] in the shade and rising, unless otherwise authorized by the Resident.

525.07 Setting Stones Stones shall be thoroughly cleaned before being set, and the bed to receive it shall be well cleaned. The thickness of all joints and beds shall be uniform throughout. Spalls shall not be used as pinner in mortar beds or joints. When any stone is disturbed or mortar joint broken, the stone shall be taken up, and after all mortar has been cleaned from the stone, bed and joints, the stone shall be reset in fresh mortar. All stones shall be well bedded with the face joints properly raked before the mortar has set.

The masonry shall be kept wet during the pointing, and in hot or dry weather shall be protected from the sun and kept wet for a period of 3 days after completion of setting, unless otherwise permitted or directed. Face surfaces of stone shall not be smeared with mortar and after pointing has been completed and set, the masonry shall be thoroughly cleaned as directed. Stones shall not be set when the stones contain frost or during freezing weather, unless otherwise permitted.

Concrete backing shall be of the class shown on the Plans. The concrete shall be so worked and compacted that all spaces around stones are completely filled and an adequate bond with the stone is secured. Construction joints in the concrete, required by intermittent placing, shall be located not less than 152 mm [6 in] below the top bed of any course of the stone facing. The stones shall be secured and the concrete so placed, as approved by the Resident, to prevent movement of the stones during placement of the concrete.

525.08 Joints All joints shall be raked 38 mm [1½ in] deep and caulked with an approved two-component epoxy-resin system. All caulking shall be done in such a manner as to produce a tight, durable and impervious seal at all joints. All caulking shall be accomplished as soon as possible to avoid exposure at joints to salt water.

The two-component epoxy-resin system shall be proportioned, mixed, and applied in accordance with the manufacturer's recommendations.

The joint below the bottom layer of granite shall be 25 mm +/- 12.5 mm [1 in +/- ½ in] in thickness.

525.09 Method of Measurement Granite masonry will be measured for payment by the number of square meters

[square feet] of exposed granite masonry, including joints, in the completed work and measured from the pitch lines as shown on the plans.

525.10 Basis of Payment Granite masonry will be paid for at the contract unit price per square meter [square foot] complete in place and accepted. This price shall include all materials, labor and incidentals necessary to complete the work. The cost of the anchors, completed and in place, shall be included in the contract unit price of this item.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
525.30 Granite Masonry	square meter [Square Foot]

## SECTION 526 - CONCRETE BARRIER

526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications and the lines and grades shown on the plans or established by the Resident.

The types of concrete barrier are designated as follows:

Temporary Concrete Barrier Type I Double faced removable concrete barrier of the shape shown on the plans.

Permanent Concrete Barrier Type II Double face barrier of a shape shown on the plans.

Permanent Concrete Barrier Type IIIa Single face barrier 825 mm [32 in] high of a shape shown on the plans.

Permanent Concrete Barrier Type IIIb Single face barrier 1075 mm [42 in] high of a shape shown on the plans.

Permanent Concrete Transition Barrier Barrier of various heights joining steel bridge rail to steel guardrail.