

ITEM 0320401

GRANITE BANDS

DESCRIPTION

The work of this Item includes furnishing all materials, equipment, supplies, accessories, incidentals, labor and supervision, and performing all operations required to furnish, fabricate, finish and install granite bands on sidewalks as shown on the Drawings, as specified herein, and as in additionally required to properly complete the work, including mortar setting bed and joints and all other incidental items.

Drawings, Conditions of the Contract and other Specification Items apply to the work of this Section insofar as applicable.

Definition of terms used hereinafter relating to granite work shall be those published by the National Building Granite Quarries Association, Inc.

REFERENCED ITEMS

None

REQUIRED SUBMITTALS

Product Data: Submit specifications and other data for all granite work materials required, including but not limited to, cement, sand, mortar coloring additive, latex polymer modifier for mortar setting bed, bonding compound, and certification that stonework complies with specified requirements. Include detailed instructions for handling, storage, installation and protection of all items.

Samples: Submit two sets of duplicate samples of the sizes indicated below. Include in each set the full range of exposed color and texture to be expected in the completed work.

<u>Item</u>	<u>Size</u>
Granite Band	3'-0" x 18" x 2"

Shop Drawings: Submit cutting and setting drawings showing size, dimensions, sections and profiles of granite unit; arrangement and provisions for jointing, expansion, relationship to adjacent items, and for reception of other work. Indicate the location of each granite unit on the setting drawings with a unique number designation corresponding to a like number to be marked on the back of each unit.

MATERIALS

Source Quality Control

Provide granite, which complies with recommendations of the National Building Granite Quarries Association, Inc. (NBGQA).

Obtain granite from quarry with consistent color range and texture of granite throughout the work. Do not change quarry or suppliers of materials during the course of the work.

Granite

All granite shall be premium grade, free of cracks, seams, or starts, which may impair its structural integrity or function. Inherent variations, characteristic of the quarry, from which it is obtained, will be acceptable. The granite type specified below has been selected by the Engineer for its color and texture. Granite similar to that listed below may be submitted to the Engineer for approval. However, it shall be understood that the Engineer will be the sole judge regarding the acceptability of a proposed substitute, and rejection of a proposed material shall not give rise to any claim for additional compensation or for an extension to the time of completion.

Granite Bands shall be "Texas Red" supplied by "Cold Spring Quarries" or approved equal.

Granite shall be cut by the fabricator to the exact dimensions and radii required prior to shipment to the Project site.

Where granite is to be used at pole bases, it shall be fitted around the foundation so as to be complete and acceptable to the Engineer before the pole base is set.

Comply with requirements of ASTM C-615-03, Architectural Grade, and National Building Granite Quarries Association, Inc., (NBGQ) for color and finish qualities.

Mortar and Grout Materials

White Portland Cement: ASTM C-150-04, except complying with the staining requirements of ASTM C-91-03 for not more than 0.03% water-soluble alkali. Furnish Type I, except Type III may be used for setting stonework in cold weather with the Engineer's written approval.

Hydrated Lime: ASTM C-207-04, Type S.

Sand (Fine Aggregate): ASTM C-144-03, except graded with 100% passing the No. 16 sieve for 6 mm (1/4") and narrower joints.

Mortar Coloring Additive: Shall be SGS colors, manufactured by Solomon Grind Chem Service, Springfield, IL 62705, or approved equal. Mortar coloring additive shall have mineral oxide pigment and shall be certified by the supplier to be resistant to alkali, light, and weather, and shall be of a chemical composition unaffected by cement and free of water and soluble salts. Color pigment shall not exceed 10% of the Portland cement in the mortar. Color of mortar shall match granite, and shall be approved by the Engineer.

Latex Polymer Additive: shall be "Super-Admix", manufactured by Super-Tek Products, Woodside, NY 11377, or equivalent products manufactured by Laticrete International, Inc., Bethany, CT, or Boiardi Products Corp., Little Falls, NJ 07424. Mixing shall be in accordance with the manufacturer's instructions.

Bond Coat

High strength bond coat between concrete base slab and setting bed mortar, and between setting bed mortar and granite shall be "Super-Tec Bond Coat: manufactured by Super-Tek Products, Woodside, NY 11377 or equivalent products manufactured by Laticrete International, Inc., Bethany, CT.

Sand Joint Filler

A sand and cement mixture shall be used for the joint filler between granite pavers. Mixture for the joint filler shall contain coloring additive so that the joint filler mixture will match the color of the pavers, as approved by the Engineer.

Portland cement shall be as specified above.

Sand shall be a clean, washed, uniformly well graded masonry sand conforming to ASTM C-144-03, except that the fineness modulus shall be 2.25 + 0.10. Sand shall be from a single source. Source of supply shall not be changed during course of job without written permission of the Engineer.

Coloring additive for sand/cement joint filler mixture shall be as specified above.

Joint filler mixture shall be one part Portland cement, three parts sand, and coloring additive (up to 10% of Portland cement volume), mixed dry until the mass is of

uniform color.

Fabrication

General: Fabricate granite as shown and as detailed on final approved shop drawings and in compliance with recommendations of applicable stone association.

Dimensions: Maximum variation in the dimensions of any piece shall be one fourth ($\frac{1}{4}$) of the specified joint width.

Flatness Tolerances: Variation from true plane, on flat surfaces shall be determined by use of a one meter long straightedge applied in any direction on the surface. On surfaces having thermal finishes, the maximum variation from true plane shall not exceed one fourth ($\frac{1}{4}$) of the specified joint width.

Backs of Pieces: Backs of all pieces shall be sawn and dressed to true planes. Maximum variation in thickness from that specified shall not exceed $\frac{3}{8}$ " on pieces 2" to modular 3" thick.

Sawn backs shall be cleaned of all rust stains and free iron particles.

Setting Bed Mortar

Setting bed mortar shall conform to ASTM C-270-03, Type S, except that the latex polymer additive shall be mixed with the cementations materials and aggregate in lieu of water.

Mortar Grout For Pointing

Mortar grout for pointing of joints shall consist of one part white Portland cement, two parts sand, mortar coloring additive, gauged with latex polymer additive. Color of mortar shall match the granite and shall be approved by the Engineer.

CONSTRUCTION METHODS

Carefully pack, band and load granite for shipment on wood pallets or skids. Pallets and skids shall be stacked in such a manner as to evenly distribute the weight of the granite and to prevent breakage, cracking, and other damage to the granite. Protect stone during storage and construction against moisture, soiling, staining and physical damage. No material, which may cause staining, or discoloration may be used for blocking, packing or dunnage. Use polyethylene or other suitable plastic to separate granite from dissimilar materials. Allow air to circulate around the granite

in storage.

Handle stone so as to prevent chipping, breakage, marring, soiling and other damage. Do not use pinch or wrecking bars without protecting edges of stone with wood or other suitable materials.

Protect mortar materials from weather, moisture and contamination with earth and other foreign materials.

Any piece of granite showing flaws or any type of damage shall be removed immediately and replaced with new material.

The work of this Item shall be coordinated with other work, which will be affected by thereby or has an affect on the granite work.

Cold Weather Protection:

Remove any ice or snow formed on stonework bed by carefully applying heat until the surface is dry to touch.

Remove stonework determined to be damaged by freezing conditions.

Use the following construction procedures while work is in progress:

When air temperature is from 40°F to 32°F, heat sand or mixing water to produce mortar temperatures between 40°F and 120°F.

When air temperature is from 32°F to 25°F heat sand or water to produce mortar temperatures between 40°F and 120°F; maintain temperature of mortar on boards above freezing.

When air temperature is from 25°F to 20°F heat sand or water to produce mortar temperatures between 40°F and 120°F; maintain temperature of mortar on boards, above freezing; use other heat sources on both sides of walls under construction; use wind breaks when wind is in excess of 15 mph.

When air temperature is 20°F and below, heat sand and mixing water to produce mortar temperatures between 40°F and 120°F; provide enclosures and auxiliary heat to maintain air temperature above 32°F; do not lay units which have a surface temperature of 20°F and lower.

Protect newly completed stonework and partially completed stonework not being

worked on as follows:

When mean daily air temperature is from 40°F to 32°F, protect stonework from rain or snow for at least 24 hours by covering with weather-resistive membrane.

When mean daily temperature is from 32°F to 25°F, completely cover stonework with weather-resistive membrane for at least 24 hours.

When mean daily temperature is from 25°F to 20°F, completely cover stonework with insulating blankets or similar protection for at least 24 hours. When mean daily temperature is 20°F and below, maintain stonework temperature above 32°F for 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps, or other acceptable methods.

Do not use frozen materials or materials mixed or coated with ice or frost. Do not use salt to thaw ice or for any other reason. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agents, and do not use calcium chloride in mortar or grout.

Remove and replace stonework damaged by frost or freezing.

During all seasons, protect partially completed stonework against weather when work is not in progress.

Prevent mortar from staining the face of stonework and other surfaces to be left exposed. Immediately remove mortar splatter.

Acceptability of Concrete Subbase

Contractor shall examine the concrete sub base to determine its adequacy to receive granite banding and mortar setting bed. Evidence of inadequate sub base shall be brought to the immediate attention of the Engineer.

Start of granite work shall constitute acceptance of the concrete sub base.

Setting Granite Bands

Field measurements shall be made prior to fabrication of granite work.

All setting shall be done by competent granite setters under adequate supervision.

Granite units with chips, cracks, stains, or other defects, which might be visible in the finished work, shall not be used.

Before setting, granite shall be clean and free of dirt, and foreign matter on all sides. Granite shall be dry before setting.

Bond coat shall be applied to concrete base slab using flat trowel. Thickness of bond coat shall be 1/16" thick.

Granite shall be set true to the required lines and grades. Unless otherwise indicated on the Drawings, all joints shall be 3/8" thick. Direct bearing contact between granite pieces is prohibited.

Mortar bed shall be spread evenly over the troweled bond coat. Mortar setting bed shall be 1" thick, minimum. Bond coat shall be applied to mortar bed using flat trowel to a thickness of 1/16". Before setting, the back of each granite piece shall be dampened and shall receive a slurry of mortar to ensure maximum contact with mortar bed. Each piece shall be carefully bedded in a full bed of mortar and tapped home with a rawhide mallet to a full and solid bearing. Particular care shall be exercised to equalize joint openings.

Exposed surfaces shall be kept free from mortar at all times. Any mortar smears shall be immediately removed with a clean sponge and clean water before latex modified mortar can set.

All joints except granite paver joints and expansion joints shall be completely filled with mortar, then raked out to a depth of not less than 3/4". Raked joints shall be brushed clean and pointed with colored mortar to a flat cut joint. Mortar grout between granite pieces shall be uniform in appearance, texture, and color. After initial set of mortar, joints shall be finished by tooling with a rounded, non-staining jointer to produce a glassy-hard, polished slightly, concave joint, free of drying cracks.

After pointing, granite work shall be carefully cleaned, removing all dirt, excess mortar and stains. Expansion joints shall be cleaned of all mortar and left ready for sealing of joints under other Items of work.

After a sufficient area of granite pavers has been set, fill joints by thoroughly sweeping dry sand/colored cement joint filler mixture into the joints. When joints are filled, paver surfaces shall be swept clean of the mixture and inspected by the Engineer.

Upon completion of granite work, surfaces shall be left in a clean, unsoiled condition, acceptable to the Engineer.

Adjust and Clean

Remove and replace stone units, which are broken, chipped, stained or otherwise damaged. Where directed, remove and replace units, which do not match adjoining stonework. Provide new matching units, install as specified, and point-up joints to eliminate evidence of replacement. Repoint defective and unsatisfactory mortar joints as required to provide a neat, uniform appearance.

Exposed surfaces shall be kept free from mortar at all times. Any mortar smears shall be immediately removed with a clean sponge and clean water before latex modified mortar can set. Sweep areas of granite on setting bed clean of excess sand.

Clean granite work not less than six days after completion of work, using clean water and stiff-bristly brushes. Do not use wire brushes, acid type cleaning agents, or other cleaning compounds with caustic or harsh fillers.

METHOD OF MEASUREMENT

Granite Bands will be measured for on a linear foot basis, complete, in-place, as shown on the Drawings, as specified herein and as directed by the Engineer.

BASIS OF PAYMENT

Granite Bands will be paid for at the Contract Unit Price bid per linear foot under Item 0320401, "GRANITE BANDS", which price shall be full compensation for furnishing, fabricating, finishing and installing the granite bands complete, in - place, including furnishing and installing the latex polymer modified setting bed and joints, bond coats, and all other items necessary to properly complete the work.

<u>PAY ITEM</u>	<u>DESCRIPTION</u>	<u>PAY UNIT</u>
0320401	Granite Bands	LF