

## SECTION 09 63 19

### STONE FLOORING

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Granite.
- B. Microporous sealer.
- C. Mortar for setting bed.
- D. Grout.
- E. Reinforcement.
- F. Cleavage membrane.
- G. Sealant.

##### 1.02 RELATED SECTIONS

- A. Ceramic and quarry tile flooring and base are specified in Section 09 30 00 - Tiling.

##### 1.03 MEASUREMENT AND PAYMENT

- A. General: Granite flooring and base will not be measured separately for payment but will be paid for as part of the Contract lump sum price for Architectural Work.

##### 1.04 DEFINITIONS

- A. The words and terms used in these Specifications conform with the definitions given in ASTM C119.

##### 1.05 REFERENCES

- A. American National Standards Institute (ANSI):
  - 1. ANSI A108.1 Installation of Ceramic Tile with Portland Cement Mortar
  - 2. ANSI A108.5 Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar
  - 3. ANSI A108.10 Installation of Grout in Tilework
  - 4. ANSI A118.1 Specifications for Dry-Set Portland Cement Mortar
  - 5. ANSI A118.6 Specifications for Ceramic Tile Grouts
- B. American Society for Testing and Materials (ASTM):

## STONE FLOORING

1. ASTM C97 Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone
2. ASTM C99 Test Method for Modulus of Rupture of Dimension Stone
3. ASTM C119 Standard Terminology Relating to Dimension Stone
4. ASTM C144 Specification for Aggregate for Masonry Mortar
5. ASTM C150 Specification for Portland Cement
6. ASTM C170 Test Method for Compressive Strength of Dimension Stone
7. ASTM C207 Specification for Hydrated Lime for Masonry Purposes
8. ASTM C615 Specification for Granite Dimension Stone
9. ASTM C920 Specification for Elastomeric Joint Sealants
10. ASTM D2178 Specification for Asphalt Glass Felt Used in Roofing and Waterproofing

### **1.06 SUBMITTALS**

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.
- B. Shop Drawings: Submit fully detailed Shop Drawings, showing granite flooring layouts, profiles, dimensions, bedding and joint details, and connections to adjoining work.
- C. Product Data: Submit manufacturer's specifications, catalog cuts, color range of granite, data sheets, installation instructions, and maintenance instructions. Submit certified test data for granite sample recently taken from representative areas of the supplying quarry, showing compliance with minimum physical characteristics specified.
- D. Samples: Submit 12-inch-square units of granite flooring and finish specified and 12-inch finished lengths of base. Samples shall show full range of color and texture. Samples shall match the Engineer's control samples. Also, provide sample of joint treatment, including one intersecting grouted joint, using actual granite flooring mounted on plywood. Samples require approval of the Engineer before they may be used in the work.

### **1.07 QUALITY ASSURANCE**

- A. Granite shall be supplied from quarries having adequate capacity and facilities to meet the indicated requirements. Cutting and finishing shall be performed by skilled stone masons with substantial experience and the necessary equipment.
- B. Any granite member or component showing flaws or imperfections upon receipt at the site shall be referred to the Engineer for a determination as to whether or not it will be rejected or may be patched or redressed for use in the work.

- C. Chips at edges of granite flooring or other finished members will not be acceptable. Pieces with chipped edges shall be rejected but may be cut to smaller size if appropriate for use in the work.
- D. The Engineer reserves the right to require tests of the specified physical characteristics be performed on samples taken from the area of the quarry from which the granite to be furnished is taken.
- E. Granite shall match the Engineer's control samples in all respects. Control samples require the Engineer's approval before they may be used as a standard.

**1.08 FIELD MOCK-UP**

- A. Requirements: Provide field mock-ups, as specified, for the Engineer's approval.
- B. Typical Floor Panel: The Contractor shall install a typical floor panel, approximately 6 feet square in an appropriate location. Mock-up shall include joint treatment and other accessories as required for a finished installation. Keep panel damp until mortar has set; dry slowly to attain true appearance of finished work. Maintain accepted panel as the standard for completed work. Provide a typical floor panel for each different type of granite flooring and floor design indicated.
- C. Acceptance: Approved typical floor panel will be used to establish acceptable minimum standards of appearance and work quality. Acceptance will be based on uniformity, color match, proper texture, and proper construction methods.

**1.09 PRODUCT DELIVERY AND STORAGE**

- A. Deliver materials, other than bulk materials, in manufacturer's or supplier's unopened containers fully identified with name, brand, type, grade, class, size, color, and pattern. Store materials above ground and protect from weather and damage. Store in accordance with manufacturer's or supplier's instructions.

**1.10 JOB CONDITIONS**

- A. Examine substrates and adjoining construction, and the conditions under which granite flooring work is to be installed, and do not proceed with the work until conditions detrimental to the proper and timely completion of this work have been corrected.
- B. Set and grout granite flooring when ambient temperature is above 50 degrees F. Do not set or grout granite flooring when ambient temperature is above 90 degrees F.

**1.11 MAINTENANCE MATERIALS**

- A. Upon completion of the work, deliver to the Engineer an additional two percent of total of each granite flooring size, pattern, and color used on the job, for use in future repair and maintenance work. Furnish boxes of whole flooring units, sealed and properly identified. Include trim shapes.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Granite: Flooring and base shall be granite dimension stone conforming to applicable requirements of ASTM C615, sound, durable, free of cracks, seams, and starts; free of minerals which may cause staining under the conditions of use; and conforming to the following minimum physical requirements:
1. Absorption by Weight: 0.40 percent maximum when tested in accordance with ASTM C97.
  2. Density: 160 pounds per cubic foot minimum when tested in accordance with ASTM C97.
  3. Compressive Strength: 19,000 psi minimum when tested in accordance with ASTM C170.
  4. Modulus of Rupture: 1,500 psi minimum when tested in accordance with ASTM C99.
- B. Color, Texture, and Configuration: Color of granite shall be within the range of the Engineer's control samples. Dimensions, texture, and finish of granite shall be as indicated. Provide sanitary cove for base where indicated.
- C. Trim Shapes: Include matching stops, returns, trimmers, nosings, and special shapes required to produce complete, neatly finished granite floor and base installations.
- D. Microporous Sealer: Provide a microporous sealer, as recommended by the granite tile manufacturer, for sealing the backs of granite tile units to prevent warpage and curling of the granite units after installation.
- E. Mortar for Setting Bed:
1. Cement: ASTM C150, Type I.
  2. Lime: ASTM C207, Type S.
  3. Sand: ASTM C144.
  4. Water: Clean, potable, non-alkaline.
  5. Mix: ANSI A108.1. Include ANSI A108.5 bond or skim coat, using A118.1 dry-set portland cement mortar.
- F. Grout: ANSI A118.6, colors as selected by the Engineer.
- G. Reinforcement: 2-inch by 2-inch mesh, 16 gage galvanized steel wire fabric.
- H. Cleavage Membrane: ASTM D2178, asphalt-impregnated glass felt, Type III - standard ply sheet.
- I. Sealant: Mildew-resistant urethane or silicone sealant conforming to applicable requirements of ASTM C920. Provide Grade P for joints in horizontal surfaces and Grade NS for joints in vertical surfaces. Provide for M and G uses. Sealant may be Type S or Type M as appropriate. Color shall match grouted joints. Include proper backer rod where indicated or required.

**2.02 FABRICATION****A. Dimensional Tolerances:**

1. Thickness: Variation from the thickness indicated shall not exceed plus or minus 1/8 inch.
2. Face Dimension: Variation shall not exceed one fourth of the indicated joint width or 1/16 inch, whichever is greater.

**B. Flatness Tolerances:**

1. Determine variation from true plane by means of a 4-foot straightedge placed in any direction on the surface.
2. On polished, honed, or fine rubbed finishes, variation from a true plane shall not exceed 1/3 of the indicated joint width or 1/16 inch, whichever is greater. On thermal and sandblasted finishes, variation from a true plane shall not exceed 1/2 of the specified joint width or 3/16 inch, whichever is greater.

**C. Rejection Criteria:** The above-specified tolerances apply to occasional random variation in dimensions and flatness. Granite pieces which vary consistently in a manner which is detrimental to the quality of the finished work (for example, pieces which are consistently thinner than the indicated thickness or which are consistently cupped, bowed, or warped) shall be rejected even though each individual piece may be within the specified tolerances.**PART 3 - EXECUTION****3.01 EXAMINATION OF SUBSTRATE SURFACES**

- A.** Examine subfloor and substrate surfaces to receive granite. Subfloor and substrate surfaces shall be firm, dry, clean, and free from defects or irregularities that may impair bond or jeopardize the quality of the work, and no paving or flooring work shall be performed over affected areas until suitable corrections have been made.

**3.02 INSTALLATION**

- A.** Install granite flooring and base in full mortar setting bed as indicated and in accordance with applicable requirements of ANSI A108.1. Minimum thickness of mortar setting bed shall be 3/4 inch.
- B.** Granite shall be cleaned and sponged with clean water just before setting. Each unit of granite shall be set level, true to line, with uniform joint widths, as indicated.
- C.** All joints shall be raked out 3/8 inch in depth, cleaned, dampened, and pointed full and flush with joint mortar or grout. Conform with applicable requirements of ANSI A108.10. Joints shall be densely tooled flat at 1/16 inch below face of granite. Faces of granite shall be kept free of mortar and grout.

STONE FLOORING

- D. Provide expansion joints in granite flooring and base where indicated. Provide sealant and backer rod as required. Joints shall coincide with building expansion joints where they occur, and shall penetrate the setting bed completely.
- E. Install cleavage membrane over concrete or masonry surfaces where indicated or required.
- F. Install metal reinforcement in mortar setting bed for flooring where indicated or required.

**3.03 INSTALLATION TOLERANCES**

- A. Joint Arris Lines: 1/16 inch maximum variation for honed and polished finishes; 1/8 inch maximum variation for thermal finish.
- B. Joint Width: Plus or minus 1/16 inch.

**3.04 PROTECTION**

- A. After installation, protect granite from damage until completion and acceptance of the work by the District. Do not use lumber or other material that may stain the granite. Provide non-staining building paper and clean plywood in areas to be walked on by workers.

**3.05 CLEANING**

- A. Upon completion of the work, clean granite, point open joints, and replace defective work. Do not use acids, abrasive cleaners, or wire brushes.

**END OF SECTION 09 63 19**