

**SECTION 096616 TERRAZZO FLOOR TILE**

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. The Work of this Section includes all labor, materials, equipment, and services necessary to complete terrazzo tile as shown on the drawings and/or specified herein, including, but not limited to, the following:
  - 1. Terrazzo floor tile.
  - 2. Setting beds.
  - 3. Divider strips.
  - 4. Crack isolation sheet.

1.3 RELATED SECTIONS

- A. Cast-in-Place Concrete - Section 033000.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm experienced in supplying products similar to those indicated for this Project with a record of successful in-service performance.
- B. Installer Qualifications: Engage an experienced Installer who employs only persons trained in installing terrazzo tile products similar to those required for this Project.
- C. Single-Source Responsibility: Provide material produced by a single manufacturer for each terrazzo tile type.
- D. TCNA Standards: Comply with specified provisions and recommendations of Tile Council of North America (TCNA).
- E. Performance Requirements
  - 1. Compressive Strength at the time of delivery to be not less than 10,000 psi when tested in accordance with ASTM D 579
  - 2. Water Absorption shall not be greater than 0.01% when tested in accordance with ASTM D570.
  - 3. Tensile Strength: 2,500 psi per ASTM C 307.
- F. All surfaces shall have a minimum wet DCOF AcuTest value of 0.42 and tested per ANSI A326.3 Dynamic Coefficient of Friction of Hard Surface Flooring Materials.

1.5 SUBMITTALS

- A. Product data for each type of terrazzo tile and setting material.
- B. Samples for approval of the Architect in the form of 12-inch-square samples of each type of terrazzo tile required, showing full range of colors, textures, finishes, and other variations related to visual characteristics to be expected in the finished Work.
  - 1. Prepare tile samples from same materials to be used for the Work mounted on plywood or hardboard backing, at least 12 inches square.
  - 2. Include not less than 6-inch-long sample of divider strip material.

1.6 TESTING

- A. The manufacturer of the precast terrazzo tile shall perform independent testing for slip resistance per ASTM C 1028 and shall submit results of such test to the Architect.
- B. The Owner shall retain the services of an Independent Testing Laboratory to test the precast terrazzo tile for slip resistance in accordance with ASTM C 1028. The Contractor shall provide necessary material for testing and shall coordinate with the testing Laboratory as required. The Testing Laboratory shall submit results of the tests to the Owner, Architect and Contractor.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in factory wrappings, clearly labeled with identification of manufacturer and lot number. Store materials in an area protected from weather, moisture, soiling, extreme temperatures, and humidity. Store tiles off the ground in the boxes in which they were shipped.
- B. Comply with instructions and recommendations of the manufacturer for special delivery, storage, and handling requirements.

1.8 PROJECT CONDITIONS

- A. Maintain minimum ambient temperatures of 50 deg. F during installation and for 7 days after completion, unless higher temperatures are required by manufacturer's instructions.

1.9 SEQUENCING AND SCHEDULING

- A. Sequence terrazzo tile installation with other work to minimize possibility of damage and soiling during remainder of construction period.

1.10 ATTIC STOCK

- A. Attic Stock: Deliver stock of maintenance material to Owner. Furnish maintenance material matching products installed, packaged with protective covering for storage and identified with appropriate labels.
  - 1. Terrazzo Floor Tiles: Furnish quantity of full-size units equal to 2.0% of amount installed, but not less than ten units of each type installed.

**PART 2 - PRODUCTS**

**2.1 EPOXY TERRAZZO TILE**

- A. Manufacturers: Provide epoxy terrazzo tile as scheduled, manufactured by Terrazzo Co. , Concrete Collaborative or approved equal.
- B. Precast terrazzo tile shall conform to the following:
  - 1. Flat edge.
  - 2. Surface finish to be ground and polished, free of holes or rough areas.
  - 3. Finish: Smooth.
- C. Epoxy: 100% Solids epoxy matrix terrazzo binder.
- D. Aggregates: All aggregates to meet ASTM C 33 specifications, cleaned and properly graded to size. Aggregate shall be blended to meet individual project requirements.
- E. Coloring: Pigments used shall be inorganic, resistant to alkalinity and used per manufacturer's recommendations.
- F. Color Blending: Factory blend precast terrazzo that has a natural color range so products taken from one container will have the same range as products from a separate container. Pallets to be marked and shipped numerically. Install tile from pallets in a numerical sequence blending from two to three pallets.
- G. Setting Materials: Latex Portland Cement Mortar ANSI A118.4 as manufactured by Laticrete; no fast setting Latex Portland cement mortar shall be allowed.
- H. Grouting Materials
  - 1. Latex Portland Cement Grout: Comply with ANSI A118.6 and the following:
    - a. Water Emulsion Latex Additive: Add at project site to pre-packaged dry grout mix, with type of latex and dry grout mix specified or recommended by terrazzo manufacturer.
      - 1) Latex Additive: Laticrete No. 4237.
      - 2) Grout Type: Blended, marble fines and Portland cement grout specified or supplied by terrazzo manufacturer.
  - 2. Grout Colors: To be determined by Architect, based upon final selection of colors for precast terrazzo. May require a custom color if satisfactory color is not available in manufacturer's standard range.
- I. Divider Strips: 1/16" thick and 1/8" thick white metal divider strips as directed by the Architect.
- J. Expansion Joint Material: Pair of 13/16" x 3/4" angles white metal, 16 ga. with 1/4" black neoprene expansion strip.
- K. Cleaner: Liquid neutral chemical cleaner with pH factory between 7 and 8, of formulation recommended by sealer manufacturer for type of precast terrazzo used and complying with NTMA requirements.

- L. Impregnator: Colorless, slip and stain resistant penetrating impregnator that does not affect color or physical properties of precast terrazzo surface. Flash point (ASTM D 56): 80 degrees F., minimum. Provide terrazzo impregnator equal to "Stone Impregnator O.R." made by Vic International Corp.
- M. Crack Isolation Sheet: "Noble Seal CIS" made by the Noble Co. or approved equal. Provide seaming cement as recommended by sheet manufacturer.
- N. Mixes
  - 1. Aggregate: Natural, sound, crushed marble chips without excessive flats or flakes complying with NTMA requirements.
  - 2. Matrix Pigments: Pure mineral or synthetic pigments, resistant to alkalis and non-fading. Mix pigments with matrix to provide required colors.
  - 3. Face layer shall include 70% coverage of the precast terrazzo face with marble aggregate.
- O. Tolerances
  - 1. Dimensional Tolerances: Fact - toe + 1/32"; thickness = + 1/32".
  - 2. Warpage
    - a. Along with any edge + 1.5%.
    - b. On either diagonal + 1.5%.
  - 3. Wedging: Not to exceed 1.0%.
  - 4. Abrasive Hardness: ASTM C 501, 50 14-28 depending on aggregates used.
  - 5. Mohs Hardness: 4 - 5 depending on aggregates used.
- P. Tests: Manufacturer to supply independent laboratory for test results on:
  - 1. Tensile Strength, ASTM D 307.
  - 2. Water Absorption, ASTM D 307.
  - 3. Compressive Strength, ASTM C 3070.
  - 4. Slip resistance (tile only), ASTM C 1028.

## 2.2 PRECAST TERRAZZO TILE

- A. Provide "Venice" terrazzo tile with polished finish as manufactured by Concrete Collaborative or approved equal. Tile shall be size as scheduled, with 1/16" grout joints. Tile to have water absorption not to exceed 3.2% per ASTM C 97.
  - 1. Color and finish: As selected by Architect.
- B. Provide terrazzo tiles that are free of cracks, seams, starts, holes, rough areas, and other defects impairing their function for use indicated, and have the following characteristics:
- C. Color Blending: Aggregates used for tile has a natural color range with slight variation in overall color. Blend tiles at job site from multiple pallets in numerical sequence.
- D. Aggregate: Natural, sound, crushed marble chips without excessive flats or flakes, complying with NTMA requirements.
- E. Matrix Pigments: Pure mineral or synthetic pigments, resistant to alkalis and non-fading.

- F. Latex-Portland Cement Mortar (for Thin-Set Applications): ANSI A118.4, composition as follows:
  - 1. Prepackaged dry mortar mix with either polyvinyl acetate or ethylene vinyl acetate dry polymer additive.
  - 2. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. DAP D-40 Latex-Fortified Thin-Set Mortar, DAP.
    - b. Laticrete 253 Multipurpose Thin-Set Mortar, Laticrete.
    - c. Keraquick M, Mapei.
- G. Divider Strips and Edging: Brushed nickel, 1/8" wide joints, designed for flooring applications, in longest lengths available, height to match thickness of tile.
- H. Grout Colors: Where manufacturer's standard grout products are indicated, provide colors to be selected by the Architect from manufacturer's full range of standard colors.
- I. Latex-Portland Cement Grout: ANSI A118.6, prepackaged dry grout mix with either polyvinyl acetate or ethylene vinyl acetate dry polymer additive. Grout shall have admixture formulated to resist staining and cracking.
- J. Trowelable Underlayments and Patching Compounds for Concrete Substrate: Latex-modified, Portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- K. Tolerances
  - 1. Dimensional Tolerances: The maximum variation of 1/32"; thickness of 1/32".
  - 2. Warpage: Plus or minus 1.5 percent along any edge and on either diagonal.
  - 3. Wedging: Not to exceed 1.0 percent.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrate conditions over which terrazzo tile will be installed. Do not proceed until unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Before installing terrazzo tile, clean substrates to remove dust, debris, sealers, coatings, oil, curing compounds, and loose particles.
- B. Ascertain that substrates are free of previous surface-applied material. Prepare substrate surfaces to accept new material.
  - 1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
  - 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- C. Illuminate areas of installation using building's permanent lighting system; temporary lighting alone will not be acceptable.

- D. Verify that materials are those specified before installing.

### 3.3 INSTALLATION, GENERAL

- A. ANSI Installation Standards: Comply with parts of ANSI A 108 series of tile installation standards in "American National Standard Specifications for the Installation of Ceramic Tile" applicable to type of setting bed and grouting method indicated.
- B. TCA Installation Guidelines: Comply with requirements indicated by reference to installation methods in TCA "Handbook for Ceramic Tile Installation."
- C. Install terrazzo tile only on sound substrates. Maintain exposed surfaces free of setting materials at all times.
- D. Do not use tile and trim units with chips, cracks, voids, stains, and other defects that might be visible in the finished Work.
- E. Set terrazzo tile to comply with Drawings and final shop drawings. Adjust accessories for the tile to set properly.
- F. Adhere tiles to substrates with setting materials indicated, and install specified divider strips as recommended by tile manufacturer. Match tiles for color and pattern by using tiles from cartons in same sequence as manufactured and packaged.
- G. Set individual tiles into setting material, taking care to maintain accurate joint alignment and spacing. Beat in tile to obtain 100 percent contact between back of tile and setting material. Scribe and cut tile as necessary around obstructions to produce closely fitted, neat joints of uniform width throughout Project.

### 3.4 INSTALLATION TOLERANCES

- A. Variations from Plumb: For surfaces of columns and walls, as well as for arrises, external corners, joints, and other conspicuous lines, do not exceed 1/8 inch in 8 feet.
- B. Variation in Level: For grades shown on counters, horizontal joints, and other conspicuous lines, do not exceed 1/8 inch in any room.
- C. Variation in Surface Plane of Flooring: Do not exceed 1/8" in 10'-0" from level or slope indicated when tested with a 10-foot straight edge.

### 3.5 FLOOR TILE INSTALLATION METHODS

- A. Cement Mortar, Cleavage Membrane: ANSI A108.1A.
  - 1. Bond Coat: Cement mortar bed (thickset) with cleavage membrane.
  - 2. Concrete Subfloors, Interior: TCA F111.
  - 3. Grout: Latex Portland cement.

### 3.6 ADJUSTING AND CLEANING

- A. Remove and replace material that is broken, chipped, stained, or otherwise damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in manner to eliminate evidence of replacement.

- B. Clean terrazzo tiles after setting with MiraSeal "MiraClean #1." Use procedures recommended by tile manufacturer for types of application indicated.
- C. Apply one coat of sealer to cleaned terrazzo tile flooring. Use product compatible with cement terrazzo, and follow sealer manufacturer's guidelines.

3.7 PROTECTION

- A. Prohibit traffic from terrazzo tile after installation is completed for at least 7 days.
- B. Protect terrazzo tile flooring during construction period with Kraft paper or other heavy covering or type that will not stain or discolor tile.
- C. Before inspection for Substantial Completion, remove protective covering and clean surfaces using procedures and materials recommended by tile and accessory manufacturers.

END OF SECTION 096616