SECTION 096623 – RESINOUS MATRIX TERRAZZO FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Thin-set epoxy-resin terrazzo.
2. Thin-set, precast epoxy-resin terrazzo base units.

B. Related Sections include the following:

1. Division 1 Section 012300 - Alternates.
2. Division 7 Section 07920 - Joint Sealants for sealants installed with terrazzo.

1.3 SUBMITTALS

A. Product Data: For each type of terrazzo and accessory indicated.

B. Shop Drawings: Include terrazzo fabrication and installation requirements. Include plans, elevations, sections, component details, and attachments to other Work. Show layout of the following:

1. Divider and control- and expansion-joint strips.
2. Base and border strips.
3. Precast terrazzo jointing and edge configurations.
4. Terrazzo patterns.

C. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare samples of same thickness and from same material to be used for the Work in size indicated below:

1. Epoxy-Resin Terrazzo: 6-inch- (150-mm-) square samples.
2. Precast Epoxy-Resin Terrazzo: 6-inch- (150-mm-) square samples.
3. Accessories: 6-inch- (150-mm-) long samples of each exposed strip item required.

D. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

E. Qualification Data: For Installer.

F. Material Certificates: For epoxy terrazzo, in lieu of material test reports, when permitted by Architect, signed by manufacturers.

G. Maintenance Data: For epoxy terrazzo to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who is acceptable to epoxy terrazzo manufacturer to install manufacturer's products.

1. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
2. Engage an installer who is a contractor member of NTMA.

B. Source Limitations: Obtain primary terrazzo materials through one source from a single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.

C. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of aggregate from one source with resources to provide materials of consistent quality in appearance and physical properties.

D. NTMA Standard: Comply with NTMA Guide Specification and written recommendations for terrazzo type indicated unless more stringent requirements are specified.

E. Mockups: Install mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.

1. For epoxy-resin terrazzo, install mockups of at least 100 sq. ft. (9 sq. m) of typical flooring and base condition for each color and pattern in locations directed by Architect.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.

B. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.

C. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

D. Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

1. Provide dustproof partitions and temporary enclosures to limit dust migration and to isolate areas from noise.

PART 2 - PRODUCTS

2.1 EPOXY-RESIN TERRAZZO

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. ChemRex, Inc./SKW-MBT; Novalite.
2. Crossfield Products Corp., Dex-O-Tex Division;
3. General Polymers Corporation;
4. Key Resin Company; Key Epoxy Terrazzo.
5. Master Terrazzo Technologies, LLC; Morricite.

6. Polymerica Incorporated; MasterPiece ETS.
7. Quadrant Chemical Corporation; Quadset Epoxy Terrazzo.
8. TEC, Inc., an H. B. Fuller Company; Tuff-Lite Epoxy Terrazzo.

B. Thickness: 3/8 inch (9.5 mm).

C. Materials:

1. Flexible Reinforcing Membrane: Manufacturer's resinous membrane for substrate crack preparation and reflective crack reduction.

   a. Reinforcement: Fiberglass scrim.

2. Primer: Product of manufacturer recommended for substrate and use indicated.
3. Epoxy Resin: Manufacturer's standard recommended for use indicated and in color required for mix indicated.

   a. Physical Properties without Aggregates:

      1) Hardness: 60 to 85 per ASTM D 2240, Shore D.
      2) Minimum Tensile Strength: 3000 psi (20.68 MPa) per ASTM D 638 for a 2-inch (50.8-mm) specimen made using a "C" die per ASTM D 412.
      3) Minimum Compressive Strength: 10,000 psi (68.95 MPa) per ASTM D 695, Specimen B cylinder.
      4) Chemical Resistance: No deleterious effects by contaminants listed below after 7-day immersion at room temperature per ASTM D 1308.

         a) Distilled water.
         b) Mineral water.
         c) Isopropanol.
         d) Ethanol.
         e) 0.025 percent detergent solution.
         f) 1.0 percent soap solution.
         g) 10 percent sodium hydroxide.
         h) 10 percent hydrochloric acid.
         i) 30 percent sulfuric acid.
         j) 5 percent acetic acid.

   b. Physical Properties with Aggregates: For resin blended with Georgia White marble, ground, grouted, and cured per requirements in NTMA's "Guide Specification for Epoxy Terrazzo," comply with the following:

      1) Flammability: Self-extinguishing, maximum extent of burning 0.25 inch (6.35 mm) per ASTM D 635.
      2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F (0.0025 mm/mm per 0.5556 deg C) for temperature range of minus 12 to 140 deg F (minus 24 to 60 deg C) per ASTM D 696.

4. Marble Chips: Complying with NTMA gradation standards for mix indicated and containing no deleterious or foreign matter.

   a. Hardness: Ha-10 minimum per ASTM C 241.
   b. 24-Hour Absorption Rate: Less than 0.75 percent.
   c. Dust Content: Less than 1.0 percent by weight.

5. Divider-Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use and acceptable to terrazzo manufacturer.
6. Finishing Grout: Resin based.
7. Seal Coat: Slip resistant, thin-coat terrazzo sealer of or approved by terrazzo manufacturer.

D. Mix: Comply with NTMA's "Guide Specification for Epoxy Terrazzo" and manufacturer's written instructions for component proportions and mixing.

1. Color and Pattern: As indicated.

2.2 DIVIDER AND ACCESSORY STRIPS

A. Heavy-Top Divider Strips: Angle type in depth required for topping thickness indicated.

1. Bottom-Section Material: Galvanized steel.
2. Top-Section Material: White zinc alloy.
3. Top-Section Width: 1/8 inch (3.2 mm).

B. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material, thickness, and color of divider strips and in depth required for topping thickness indicated.

C. Accessory Strips: Match divider-strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:

1. Base bead and base dividers.

2. Edge beads for exposed edges of terrazzo.

2.3 MISCELLANEOUS ACCESSORIES

A. Patching and Fill Material: Resinous product of or approved by terrazzo manufacturer and recommended by manufacturer for application indicated.

B. Joint Sealants: Recommended by terrazzo and sealant manufacturers and complying with requirements in Division 7 Section "Joint Sealants."

C. Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by cleaner manufacturer for use on terrazzo type indicated.

2.4 PRECAST EPOXY-RESIN TERRAZZO

A. Manufacturers: Provide products by same Manufacturer as Epoxy-Resin Terrazzo.

B. Precast Epoxy-Resin Terrazzo Base Units: 3/4 inch (19 mm) thick, reinforced Portland cement terrazzo units cast in maximum lengths possible, but not less than 36 inches (900 mm); with rounded, finished top edge.

1. Type: Coved with minimum 3/4-inch (19-mm) radius.
2. Height: 4 inches (101.6 mm).
3. Outside Corner Units: With finished returned edges at outside corner.
4. Color and Pattern: Match adjacent terrazzo flooring.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

3.2 PREPARATION

A. Clean substrates of substances that might impair epoxy terrazzo bond, including oil, grease, and curing compounds.

B. Provide clean, dry, and neutral substrate for terrazzo application. Determine dryness characteristics by performing moisture tests recommended by terrazzo manufacturer.

1. Concrete: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with epoxy terrazzo.

a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.

2. Concrete Masonry Units: Fill voids and chipped areas with mortar mix to produce smooth, plumb surface.

C. Protect other work from dust generated by grinding operations. Control dust to prevent air pollution and comply with environmental protection regulations.

1. Erect and maintain temporary enclosures and other suitable methods to limit dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY-RESIN TERRAZZO INSTALLATION

A. General:

1. Comply with NTMA's written recommendations for terrazzo and accessory installation.
2. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Guide Specification for Epoxy-Resin Terrazzo."
3. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
4. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.

B. Flexible Reinforcing Membrane:

1. Prepare and prefill substrate cracks with membrane material.
2. Install membrane to produce full substrate coverage in areas to receive terrazzo.
3. Reinforce membrane with fiberglass scrim.
4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.

C. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.

D. Divider and Accessory Strips: Install in locations indicated and as required in adhesive setting bed without voids below strips.

1. Control-Joint Strips: Install back to back directly above substrate control joints.

a. Install with 1/4-inch (6.4-mm) gap between strips and install sealant in gap.

E. Fine Grinding: Grind with 120 or finer grit stones until all grout is removed from surface. Repeat rough grinding, grout coat, and fine grinding if large voids exist after initial fine grinding. Produce surface with a minimum of 70 percent aggregate exposure.

F. Remove and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

G. Construction Tolerances: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet (6.4 mm in 3 m).

3.4 PRECAST EPOXY-RESIN TERRAZZO

A. Set units using method recommended by NTMA and manufacturer unless otherwise indicated. Set units with alignment level and true to dimensions, varying 1/8 inch (3.2 mm) maximum in length, height, or width.

B. Seal joints between units with joint sealants.

3.5 CLEANING AND PROTECTING

A. Remove grinding dust from installation and adjacent areas.

B. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow to dry thoroughly.

C. Seal surfaces according to NTMA's written recommendations. Apply sealer according to sealer manufacturer's written instructions.

D. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 096623