

**SECTION 096623 - PRECAST EPOXY-RESIN TERRAZZO TREADS****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This Section includes the following types of precast terrazzo stair treads:
  - 1. Precast terrazzo stair treads with abrasive or aluminum inserts.
- B. Select finish required per the project requirements from the following:
  - 1. Finish required:
    - a. Provide a 120 grit polished surface.
- C. Related Sections: The following sections contain requirements that relate to this Section:
  - 1. Division 3 Section "Concrete Work" for concrete substrate, including levelness tolerances.
  - 2. Division 7 Section "Joint Sealers" for furnishing and installing joint sealants.
  - 3. Division 15 Section "Drainage and Vent Systems" for furnishing and setting of floor drains.

**1.02 RELATED REQUIREMENTS**

- A. Section 013000 - Administrative Requirements - Submittal procedures.
- B. Section 013329 - LEED Green Building Summary, Requirements and Goals.

**1.03 REFERENCE STANDARDS**

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

**1.04 SUBMITTALS**

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of terrazzo, accessory item, and component material specified.
- C. Shop Drawings: Showing layout of divider strips, control joint strips, and base and border strips.
- D. Samples: 6-inch-square samples of each different pattern, color, and type of terrazzo required. Provide minimum 6-inch-long samples of each type accessory item specified.
- E. Material Certification: Supplier's/manufacture's written certification that terrazzo materials provided meet or exceed specified NTMA properties.

- F. Maintenance Instructions: Submit 2 copies of written instructions for recommended periodic maintenance of each type of terrazzo.
- G. Manufacturer Experience:
  - 1. Submit proof of Associate membership in NTMA.
  - 2. Submit a list of at least five (5) epoxy terrazzo projects using material being submitted for this project installed during the last five (5) years of the same scope, complexity and at least 50 percent of the square footage.
  - 3. Manufacturer shall provide history of providing primary materials for a minimum of ten (10) years.
- H. Qualification Data: For qualified installer.
  - 1. Submit proof of Contractor membership in NTMA.
  - 2. Furnish a list of at least five (5) epoxy terrazzo projects using material being submitted for this project installed during the last five (5) years of the same scope, complexity and at least 50 percent of the square footage.

**1.05 RECYCLED CONTENT**

- A. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
- B. Indicate relative dollar value of recycled content product to total dollar value of product included in project.
- C. If recycled content product is part of an assembly, indicate the percentage of recycled content product in the assembly by weight.
- D. If recycled content product is part of an assembly, indicate relative dollar value of recycled content product to total dollar value of assembly.

**1.06 LOCAL/REGIONAL MATERIALS**

- A. Sourcing location(s): Indicate location of extraction, harvesting, and recovery; indicate distance between extraction, harvesting, and recovery and the project site.
- B. Manufacturing location(s): Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.
- C. Product Value: Indicate dollar value of product containing local/regional materials; include materials cost only.
- D. Product Component(s) Value: Where product components are sourced or manufactured in separate locations, provide location information for each component. Indicate the percentage by weight of each component per unit of product.

**1.07 VOC DATA**

- A. Adhesives:
  - 1. Submit manufacturer's product data for adhesives used on site. Indicate VOC limits of the product. Submit MSDS highlighting VOC limits.
  - 2. Submit environmental data in accordance with Table 1 of ASTM E2129 for products provided under work of this section.

**1.08 QUALITY ASSURANCE**

- A. NTMA Standards: Comply with specified provisions and recommendations of National Terrazzo and Mosaic Association, Inc. (NTMA) unless more stringent requirements are specified.
- B. Manufacturer Qualifications:



1. Manufacturer shall be an associate member of NTMA.
  2. Engage an epoxy manufacturer with at least ten (10) years experience in the manufacture of epoxy flooring materials.
- C. Installer Qualifications:
1. Installer shall be a contractor member of NTMA.
  2. Installer shall be certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
  3. Installer shall have at least five (5) years of satisfactory experience in installation of epoxy terrazzo. Installer shall demonstrate experience during last five (5) years by having completed at least five (5) projects of comparable scope and complexity of at least 50 percent of the total square footage of this project.
- D. Manufacturer's Instructions: In addition to specified requirements, comply with resin manufacturer's instructions and recommendations for substrate preparation, materials storage, mixing and application, finishing, and curing.
- E. Source Limitations for Marble: Obtain each color, grade, type, and variety of marble from one source with resources to provide materials of consistent quality in appearance and physical properties without delaying the Work.

#### 1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.
- B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.
- C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If despite these precautions coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

#### 1.10 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at 50 deg F (10 deg C) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

#### 1.11 SEQUENCING AND SCHEDULING

- A. Coordinate the work with all sections referencing this section.

#### 1.12 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

#### 1.13 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Portland Cement: ASTM C-150 Specifications for Portland Cement.
- B. Aggregates: All aggregates to meet ASTM C-33 specifications, cleaned and properly graded to size. Aggregate shall be blended to meet individual project requirements.
- C. Marble chips, size to conform with NTMA gradation standards.
- D. Coloring: Pigments used shall be inorganic, resistant to alkalinity and used per manufacturer's recommendations.
- E. Reinforcement and Hardware:
  1. To conform with NTMA and Manufacturer's design.
  2. Reinforce precast with deformed rods or wire mesh or both as recommended by precast terrazzo manufacturer.
- F. Abrasive Inserts: Shall consist of silica sand and black epoxy. Specify one to three lines.
- G. Caulks & Sealants:
  1. Urethane or Polyurethane Sealant
  2. Color to be selected by Architect from standard color pallet.
- H. Cleaner: Liquid neutral chemical cleaner, with pH factor between 7 and 8, of formulation recommended by sealer manufacture for type of precast terrazzo used and complying with NTMA requirements.
- I. Sealer: Colorless, slip and stain-resistant penetrating sealer with pH factor between 7 and 8, that does not affect color or physical properties of precast terrazzo surface. Flash point (ASTM D56): 80 degrees F, minimum.

### **2.02 MANUFACTURED UNITS**

- A. Sizing Tolerances:
  1. All units to conform to shop drawings with a 1/16" tolerance in dimension.
- B. Precast Surfaces and Edges:
  1. All exposed edges to be ground and polished with a minimum of 1/16" bevel.
  2. All finished surfaces to be ground and polished, free of holes and to have overall uniformity in matrix and aggregate.
  3. All precast terrazzo finished surfaces to be sealed with a sealer approved by manufacturer.

### **2.03 PRECAST TERRAZZO**

- A. Precast Terrazzo Units: Precast epoxy terrazzo stair tread units.
  1. Manufacturers: Subject to compliance with requirements, provided products acceptable to Architect.
    - a. Precast Terrazzo Enterprises
    - b. Wausau Tile Tectura
- B. Precast Terrazzo Stair Treads: Thickness indicated with cast-in nosing.
  1. Tread/Riser: 2" (12.7 mm) thick with manufacturer's standard abrasive pattern.
  2. Color and Pattern: Match Architect's approved sample.



**PART 3 - EXECUTION****3.01 PREPARATION**

- A. Examine concrete substrate to ensure that surface levelness tolerances are within tolerance ranges required by NTMA for type of terrazzo application specified.
  - 1. Notify Contractor of unsatisfactory levelness tolerances. Do not begin installation until unsatisfactory tolerances have been corrected and are ready to receive terrazzo.
  - 2. Verify that concrete substrates are visibly dry and free of moisture. Document the moisture level of concrete slab-on-grade surfaces prior to installation of terrazzo. Test moisture level with accord with ASTM F2170 (determining relative humidity in concrete slabs using in situ probes).
- B. Clean and prepare substrate to comply with NTMA specifications for type of terrazzo application indicated. Clean substrate of loose chips, foreign matter, oil, grease and curing compounds.

**3.02 INSTALLATION, GENERAL**

- A. Setting:
  - 1. Setting methods will vary per product. Follow all manufacturer's instructions. Set accurately as shown on the approved shop drawings. Contact your setting material manufacturer with any questions on proper bonding of all materials.  
Setting methods are:
    - a. Cement based setting materials: Manufacturer's standard
    - b. Epoxy based setting material:
    - c. Weld attachment: Contact Wausau Tile for recommended welding guidelines as provided by the structural engineer. DO NOT run a continuous weld when attaching terrazzo to avoid over-heating and cracking of the terrazzo.
    - d. Bolt attachment: Only use bolt-in option if weld attachment cannot be used. Do not over-tighten bolts to avoid cracking of the terrazzo.
  - 2. All thinset materials, whether cement or epoxy based, will require a full setting bed be applied to all appropriate surfaces of the precast terrazzo, vertical and horizontal, where contact is made with the substrate or structural base.
  - 3. Alignment of precast should be straight and true to all dimensions. It may not vary more than 1/8" in length, height, or width.
  - 4. Install anchors as shown on details, if required.
  - 5. Fill joints between with manufacturer-approved caulk or as specified.
- B. Protection:
  - 1. Upon completion, the work shall be ready for final inspection and acceptance by owner or owner agent.
  - 2. General Contractor shall protect the finished work from the time the terrazzo contractor completes the work.
- C. Finish: All precast epoxy terrazzo finished surfaces to be sealed with a sealer approved by manufacturer.

**3.03 FINAL CLEANING AND PROTECTION**

- A. Protect terrazzo from damage and wear during construction operation.

**END OF SECTION**