

**Western States Terrazzo Association (WSTA)  
GUIDE SPECIFICATION FOR EPOXY TERRAZZO**

Version 10.10 Z6

**SECTION 09:  
EPOXY TERRAZZO**

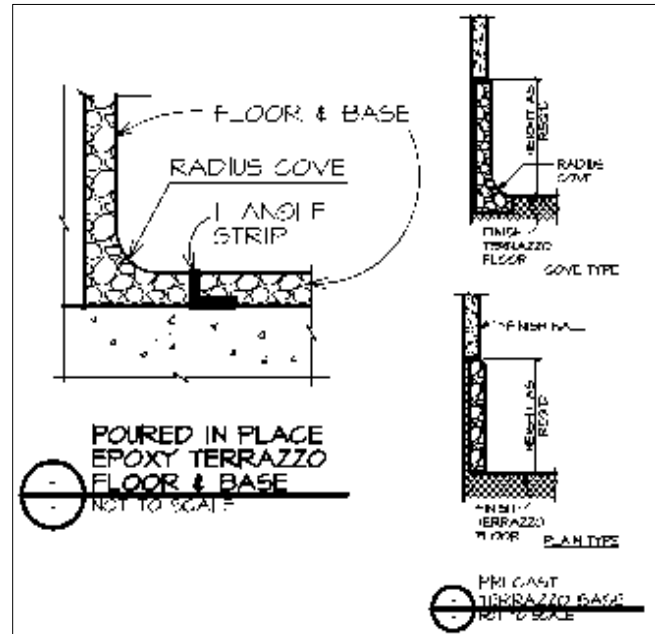
3/8" nominal thickness (1/4" optional)

**PART 1: GENERAL**

**1.01 RELATED WORK SPECIFIED IN OTHER SECTIONS**

*NOTE: Delete non-applicable items.*

- A. Furnishing and/or installation of metal lath and scratch coat.  
Section \_\_\_\_\_
- B. Attachment of metal stairs, any welding and mesh reinforcing.  
Section \_\_\_\_\_
- C. Furnishing and setting of floor drains.  
Section \_\_\_\_\_
- D. Furnishing and setting surface hardware.  
Section \_\_\_\_\_
- E. Setting of metal base beads (termination for other products).  
Section \_\_\_\_\_
- F. Backing for epoxy terrazzo base.
  - 1. Poured in place base shall be masonry or cement board at least 1/2" thick.
  - 2. Precast base shall be 1/2" or greater thickness cement board, gypsum board or equivalent.
- G. Concrete subfloor.  
Section \_\_\_\_\_



Concrete subfloor to be flat (maximum variation not to exceed 1/4" in a 10 foot span) and to have a steel trowel finished surface. Do not over trowel to dark sheen. No curing agents or other additives should be used. The slab should have an efficient moisture barrier conforming to ASTM E-1745 Class "A" directly beneath and in direct contact with the concrete slab when placed directly on grade. Saw cutting of control joints must be done between 12 and 24 hours after placement of the structural concrete. The concrete to receive epoxy terrazzo shall be of flatness minimum 1/4" in a 10 foot span (**not cumulative**) per NTMA and WSTA recommendations, unless the design team requires a higher degree of flatness for the terrazzo. Concrete shall be of the same flatness. If lightweight aggregate concrete is specified consult epoxy resin manufacturer for precautions and moisture sensitivity.

- H. Area to receive terrazzo shall be broom cleaned of all foreign matter.
- I. Sufficient water, temporary heat, lighting and adequate electric service with suitable outlets connected and distributed for use within 100 feet of any working space. Ambient and slab temperature shall be maintained by others as per manufacturer's recommendation: minimum 60 degrees and maximum 90 degrees Fahrenheit (F).

**1.02 QUALITY ASSURANCE**

- A. Acceptable supplier:
  - 1. Suppliers shall be Members in good standing of the Western States Terrazzo Association (WSTA) and the National Terrazzo & Mosaic Association (NTMA), and shall supply materials in accordance with the standards and specification of the WSTA and NTMA.
- B. Installer qualifications:
  - 1. Installer shall be a contractor member of WSTA and shall perform all work in accordance with NTMA and WSTA standards. Contractor shall submit a list of 5 projects completed of a similar scope.
- C. The owner or agent will employ a suitably qualified independent testing entity to verify the quality and readiness of substrata to receive epoxy terrazzo according to NTMA and WSTA's suggested parameters as well as approved supplier's recommendations. This particularly pertains to the efficacy of vapor retarder/barrier moisture content and transmission rate. This also applies to concrete physical properties, flatness tolerances, inherent slab shrinkage cracking and appropriate control joints per ACI-302.1. The terrazzo work will proceed after the architect, general contractor and installation contractor receive written approval. Ref. - 3.01 Inspection.

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**1.03 SUBMITTAL**

- A. Samples:
  - 1. Submit (3) 6” square samples for each color and type of terrazzo specified or selected.
  - 2. Submit (3) 6” lengths of each divider of expansion strip required.
- B. Maintenance literature:
  - 1. Submit product data for all related materials including resin matrix, crack suppression membrane, divider strips, expansion strips, sealers and cleaners.
- C. Certification:
  - 1. Submit certification letter from WSTA that terrazzo installation contractor is current member in good standing with the WSTA and NTMA.
  - 2. Suppliers shall furnish properly labeled material and Material Safety Data Sheets that comply with current local, state and federal requirements.

**1.04 DELIVERY, STORAGE AND HANDLING**

- A. Delivery of materials:
  - 1. Deliver materials in a manner that prevents damage to containers and/or bags.
- B. Storage of materials:
  - 1. Store materials out of direct solar exposure.
  - 2. Epoxy components shall be stored in a space suitable to the terrazzo contractor and kept between 60 and 90 degrees F before use.

**1.05 GUARANTEE**

Terrazzo materials and installation shall be guaranteed for a period of (1) year from date of substantial completion. Guarantee shall be limited to the repair and/or replacement of materials or workmanship found to be defective per NTMA and WSTA standards and specifications.

**1.06 PROJECT CONDITIONS**

Acceptable Substrates

- 1. Concrete sub-floor level tolerance shall be 1/4” in 10 feet. Any irregularity of the surface, which requires repair shall be performed with epoxy fillers and aggregates recommended by epoxy resin matrix manufacturer.
- 2. Maintain ambient room and floor temperature at 50 degrees F or above for a period extending 72 hours before, during, and after terrazzo floor installation.
- 3. Concrete substrate shall be tested to verify acceptable moisture levels prior to installation. Testing should be conducted in accordance with ASTM F2170 or by calcium chloride test. Acceptable moisture levels shall be as established by the NTMA for use with resin matrix terrazzo.

**PART 2: PRODUCTS**

**2.01 MATERIALS**

- A. Primer: As recommended, manufactured and supplied by resin formulator.
- B. Moisture mitigation: If indicated by moisture test results. Can be provided at extra cost to others, but must be recommended, produced and supplied by approved terrazzo resin formulator.
- C. Crack suppression/isolation membrane: As recommended, produced and supplied by approved terrazzo resin formulator, having minimum 120% elongation potential per ASTM D 412. If required, shall be an extra cost to others.
- D. Epoxy Resin: Epoxy Matrix, 100% solids, -0- VOC Epoxy Resin. Acceptable manufacturers are Dex-O-Tex/Crossfield Products Corp, General Polymers/Sherwin Williams, Key Resin West, T&M Terroxy Resin Systems. Epoxy resin mixed according to manufacturer's recommendation and laboratory tested without aggregate added: All specimens cured for 7 days at 75 degrees plus or minus 2 degrees F and 50% plus or minus 2 % R.H. The product shall nominally meet or exceed the following requirements:

<b>PROPERTY</b>	<b>TEST METHOD</b>	<b>REQUIREMENT</b>
HARDNESS	ASTM D-2240 using Shore D Durometer.	60 -85

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TENSILE STRENGTH	ASTM D-638 run at .2" min. Specimen made using "C" die listed in ASTM D-412.	3,000 psi min.
COMPRESSIVE STRENGTH	ASTM D-695, Specimen B cylinder	10,000 psi min
CHEMICAL RESISTANCE	ASTM D-1308: 7 days at room temperature indicates no deleterious effects.	

The following contaminants used:

Distilled Water.....	1% Soap Solution
Mineral Water.....	10% Sodium Hydroxide
Isopropanol.....	10% Hydrochloric Acid
Ethanol.....	30% Sulfuric Acid
.025 Detergent Solution.....	5% Acetic Acid

- E. A laboratory specimen subjected to testing, based on epoxy resin/hardener is mixed according to manufacturer's recommendations and blended with 3 volumes of Georgia White marble, consisting of 60% #1 chip and 40% #0 chip, ground and grouted with epoxy resin finished to a nominal 1/4" thickness: All specimens are cured 7 days at 75 degrees plus or minus 2 degrees F and 50% plus or minus 2% R.H. The finished epoxy terrazzo shall nominally meet the following requirements:
1. Flammability: When tested in accordance with ASTM D-635, the epoxy terrazzo shall comply with the following value: Self- extinguishing, extent of burning 0.25" maximum.
  2. Coefficient of linear thermal expansion: When tested in accordance with ASTM 696, the epoxy terrazzo will comply with the following value  $25 \times 10^{-6}$  inches per inch per degree. ASTM 696 is conducted in a temperature range from -22 degrees to 86 degrees F. This test range is to obtain a specific result and does not reflect "in use" temperature conditions.
  3. Bond strength: When tested in accordance with field test method for surface soundness and adhesion as described in ACI Committee No. 403 Bulletin the epoxy terrazzo shall comply with the following values: at least 300# adhesive and/or concrete cohesive failure.
- F. Aggregates:
1. Marble, glass, synthetic or metal
    - a. To conform with NTMA gradation standards.
    - b. Abrasion and Impact Resistance: When tested in accordance with ASTM C 131, (LA Abrasion) loss of 40 percent or less.
    - c. Chips shall contain no deleterious or foreign matter.
  2. Other Aggregates: Decorative materials not meeting the above may be used after consulting with the WSTA contractor or epoxy resin manufacturer for specific usage guidelines and recommendations.
- G. Divider and Termination "L" Strips as supplied by Manhattan American Terrazzo Strip Co. and National Metal Shapes, Inc.:
1. Types: White alloy of zinc, aluminum or plastic. If brass is desired, consult strip vendor/epoxy manufacturer regarding compatibility.
  2. Sizes: 18, 16, 14 "B & S" gauge; or 1/8" (3mm), 1/4" (6.25 mm) or 3/8" (9 mm) or wider, as detailed on drawings; solid cast, extruded or Heavy Top (HT). If not specified otherwise 16 gauge white metal shall be considered standard for base bid.
- H. Precast Base: (option to Poured in Place Terrazzo Base)
1. Types
    - a. Straight, Height 4", bull nosed or eased top edge, length 4'. Consult precast manufacturer for size options.
    - b. Cove. Finished Height 4", 3/4" or 1" radius, bull nosed or eased top edge, length 4'. Consult precast manufacturer for size options.
- I. Precast Tread and Riser: (option to Poured in place Tread and Riser unit) Consult precast manufacturer for types and dimensions.
- J. Sealer:
1. Shall not discolor or amber
  2. U/L listed as "Slip Resistant"
  3. Types:

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- a. Water based with nominal pH of 7
- b. Solvent Based with flashpoint - 80 degrees F or above per ASTM D-56

**2.02 MIXES**

- A. Terrazzo selection:
  - 1. Terrazzo type shall be 3/8" Epoxy Resin Matrix Thin-Set Terrazzo
  - 2. Terrazzo color mixes shall be WSTA or NTMA color plate or custom matrix as produced by WSTA Contractor Member. Sample(s) Matrix designation #'s \_\_\_\_\_.
- B. Proportions:
  - 1. Epoxy terrazzo topping: In accordance with resin system or supplier's recommendations.
- C. Mixing:  
Terrazzo Topping: Mix marble/aggregates/chips/fines and Epoxy Resin/hardener per formulations of approved samples, all in accordance with manufacturer's recommendations.

**PART 3-EXECUTION**

**3.01 INSPECTION**

- A. Examine areas to receive terrazzo for defects in existing work that affect proper execution of epoxy terrazzo. Reference 1.02.C
  - 1. Cracks  
If detected in substrate may transmit through epoxy terrazzo topping.
  - 2. Slab Tolerance  
Deviations beyond allowable tolerance for the concrete slab work Subfloor is not to vary more than 1/4" from true plane in a 10 foot span. As specified, epoxy terrazzo is not intended to level or flatten substrate and will only follow the contour of the concrete slab. If for any reason the subcontractor questions the suitability of the substrate for bonding, any work required to eliminate non-conformity of subsurface specifications is the responsibility of others. Any materials used to correct nonconformity must be compatible with the selected epoxy system and be approved by the terrazzo contractor.
  - 3. Moisture Testing
    - a. Moisture content testing per ASTM 2170, which advises using deep probes--ideally 40% of slab thickness--for relative humidity and temperatures. The standard under ASTM 2170 is 75% RH. (Consult with epoxy resin manufacturer for recommended guidelines.)
    - b. Moisture transmission testing per ASTM 1869 (calcium chloride test) is often utilized to also determine the rate of emissions, used under actual operational environmental conditions. The standard under ASTM 1869 is 3 pounds/24hours/1000 SF. (Consult with epoxy resin manufacturer for recommended guidelines.) ASTM 1869 Anhydrous Calcium Chloride test is not recognized as valid for lightweight aggregate concrete.
- B. Start work only when all defects have been corrected by others.

**3.02 INSTALLATION**

- A. Subfloor:
  - 1. Prepare substrate to receive epoxy terrazzo in accordance with manufacturer's recommendations.
  - 2. Install control joints divider strips in accordance with NTMA Guidelines for Crack Details and Joint Treatment.
  - 3. Install divider strips as shown on drawings or as required by slab conditions. The adhesive for bonding divider strips shall be epoxy approved by resin producer. A continuous bead of epoxy should be used to embed dividers.
- B. Moisture mitigation system. When determined necessary per approved manufacturer's recommendation at an additional cost to the owner unless called for in specification.
- C. Flexible epoxy crack isolation/suppression membrane: Bid shall include crack isolation membrane material and installation/labor cost for up to 5% of the surface area receiving terrazzo. Crack isolation membrane requirements greater than 5% of the surface area receiving terrazzo shall be at additional cost to owner.
- D. Placing terrazzo:
  - 1. Prime subfloor in accordance with manufacturer's recommendations.
  - 2. Proportion and thoroughly blend the materials.
  - 3. Place mixture to achieve specified thickness.
- E. Terrazzo Base (if specified or noted on finish schedule)
  - 1. Poured in Place shall be same color as main terrazzo field and placed at time of terrazzo floor installation.

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2. Precast Base: Straight base can be placed after terrazzo floor is complete. Precast cove base must be placed before installing terrazzo floor.
- F. Terrazzo Tread and Riser
  1. Poured in Place Tread and Risers shall be the same color as main terrazzo field and placed at time of terrazzo floor installation.
  2. Precast Tread and Risers shall be same color as main terrazzo field and placed in accordance with terrazzo contractor recommendation.
- G. Finishing:
  1. Rough grinding:
    - a. Grind with 24 or finer grit stones or with comparable abrasives.
    - b. Follow initial grind with 60/80 grit stones or with comparable abrasives
  2. Grouting:
    - a. Cleanse terrazzo with clean water and rinse. Allow to dry.
    - b. Apply epoxy grout per manufacturer's instructions.
    - c. Allow grout to cure.
  3. Fine grinding:
    - a. Grind with 80/120 grit or with comparable abrasives until all grout is removed from surface.
    - b. Upon completion, terrazzo commonly reveals approximately 70% of chips and generally matches terrazzo contractor approved submittal sample(s).
- H. Cleaning and sealing:
  1. Wash and rinse all surfaces with fresh potable water.
  2. Allow surface to dry.
  3. Apply basic sealer(s) in accordance with manufacturer's directions. The eventual custodial products and process are the responsibility of the owner or designee.
  4. Follow NTMA Maintenance Guide.
- I. The floor shall be inspected and approved by owner or design team immediately after application of basic sealer.
- J. The General Contractor shall protect the finished floor at the time that the Terrazzo Contractor completes the work.
- K. Final cleaning

END

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**NOTE:** This is a Zone 6- specific (Western States Region) Epoxy Terrazzo Specification based on the NTMA's Guide Specification for Epoxy Terrazzo.