Terrazzo Flooring – Section 096600 / Thin Set Epoxy Terrazzo – Section 096623

TERRAZZCO Epoxy Terrazzo System (3/8”-1/4” Nominal Thickness)

PART 1 – GENERAL

1.01 - SUMMARY

A. Section Includes:

1. Poured in place resinous matrix epoxy terrazzo flooring.
2. Poured in place integral formed terrazzo wall base. [Pre-cast terrazzo wall base units.]
3. [Pre-cast terrazzo tread units] [Pre-cast terrazzo tread & riser units] [Pre-cast Self-Supported Treads]
4. Joint, edge, and termination strips.
5. Prior to installation of structural floor slab, advise [General Contractor] [Construction Manager], in writing, of all requirements of concrete substrate regarding finish, level tolerance, curing and below substrate vapor barrier; see INSPECTION in Part 3.
6. Accessories necessary for complete installation.
7. Backing for Epoxy Terrazzo base must be a cement board or ¾” exterior grade plywood, concrete block, concrete or cement plaster.
8. Sufficient water, temporary heat and light, and adequate electric power with suitable outlets connected and distributed for use within 100 feet of any working space.

Note: Temperature shall be maintained as per Concord Terrazzo Company’s recommendations, minimum 55 degrees Fahrenheit, before, during and after installation.

B. Related Sections:

1. Cast-in-Place Concrete: Section 03300.
   a) Concrete sub-floor to be level (maximum variation not to exceed ¼ inch in 10 feet) and to have a light broom brushed finished surface. No curing agents or other additives which could prevent bonding should be used.
   b) The slab is required to have an effective moisture barrier placed directly under the concrete slab when placed directly on grade. Saw cutting of control joints must be done between 12-24 hours after placement of the structural concrete.
2. Sealants: Section 07920.
3. Gypsum Drywall: Section 09250.
4. Adjacent floor finishes: Division 9.
5. Shotblast or rough grind area to receive Terrazzo according to Concord Terrazzo Company’s recommendations (CSP 3-5).

1.02 – QUALITY ASSURANCE

A. Acceptable Supplier:

1. Concord Terrazzo Company shall provide materials in accordance with NTMA standards.
2. Materials used in the Terrazzo floor system should be the products of a single source manufacturer–Concord Terrazzo Company – Contact a representative at info@terrazzco.com

B. Acceptable Installers:

1. Acceptable installer shall be a contractor member of the NTMA and perform all work in accordance with NTMA standards.
2. If contractor is not a member of the NTMA, the contractor shall submit a list of 5 completed projects of similar magnitude and complexity. Installation shall be performed by an installer with minimum of 5 years experience in work of similar nature and scope.
3. Installer to verify locations of all joints required by the provisions of this Section.
    a) Joint locations may or may not be shown in drawings.
    b) Refer to drawings required under SUBMITTALS above.
4. Mock-up: Prior to starting application of flooring, provide full scale portable mock-up or mock-up to establish acceptable quality, durability, and appearance. Mock-up size must not be less than 4 square feet
    a) Acceptable mock-up to be standard of quality for installed work. May be poured onsite and will become integral part of the floor.
    b) Unacceptable installed work to be removed and replaced or refinished until acceptable

1.03 – SUBMITTALS

A. Samples:

1. Submit maximum of three samples, 6 inches by 6 inches for each color and type of terrazzo as specified.
2. Submit two 6-inch lengths of each type and kind of divider strips as specified.
3. Concord Terrazzo Company's Application Instructions: Submit descriptive data and include any specific recommendations for mixing, application, curing and precautions of special handling instructions required to comply with the Occupational Safety and Health Act.
4. Shop Drawings: Shop Drawings shall be furnished showing installation of terrazzo termination details and precast details when applicable.
5. LEED Submittals
    a) Product Data for Credit MR 4.1: Indicating percentages by weight of post-industrial and pre-consumer/post-consumer recycled content
        i.Include statement that indicates cost for each product having recycled content.
    b) Product Data for Credit MR 5.1: For products manufactured within a 500-mile radius of the project.
    c) Product Data for Credit EQ 4.1/4.2/4.3: Indicate VOC content and chemical components of resin components.
    d) Product Data for LEED Credits

e) Product Data for Credit IEQ 3.2: Products must meet the requirements of "LEED for Schools for Indoor Air Quality, based on California Section 01350 testing". Also referred to as "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers".

B. Maintenance Literature:

1. Submit two copies of NTMA maintenance recommendations.

C. Certification:

1. Concord Terrazzo Company shall furnish properly labeled material and Safety Data Sheets which comply to current state and federal requirements.

1.04 – DELIVERY, STORAGE & HANDLING

A. All materials shall be delivered to project site in Concord Terrazzo Company's or original manufacturer's sealed containers including type of material, batch numbers, date of manufacture, and pertinent labels intact and legible.

B. Store materials in dry protected area at a temperature between 55 degrees to 90 degrees Fahrenheit. Contact manufacturer if there is a deviation from parameters listed.

C. Follow all Concord Terrazzo Company's specific instructions and prudent safety practices for storage and handling.

1.05 - GUARANTEE

A. One year from the date of manufacturing of the product.

1.06 – PROJECT CONDITIONS

A. Maintain the room and floor temperature at 55 degrees Fahrenheit, or above for a period extending from 72 hours before, during and after floor installation. Concrete to receive surfacing shall have cured for at least 28 days and be free of all curing compounds.

B. Pre-job meeting between General Contractor, Architect, and installer shall be held to discuss concrete substrate, location of joints and/or saw cuts to minimize subfloor cracking and locations of control joints and strips in terrazzo surface.

C. Acceptable Substrates

1. Level tolerance: Concrete subfloor shall be level with a maximum variation from level of 1/4" in 10 feet non-cumulative. Any irregularity of the surface requiring patching and/or leveling shall be done using material approved by Concord Terrazzo Company.
2. Concrete floor shall receive a light broom brush finish.
3. No curing agents are to be used in areas to receive terrazzo.
4. Concrete slab shall have an efficient puncture-resistant, reinforced moisture vapor barrier 10 mils thick minimum placed directly under the concrete slab (for slab on grade). Do not use vapor barrier manufactured with recycled material. Testing must be done to verify that the moisture vapor emission rate of the slab does not exceed that as recommended by Concord Terrazzo Company at time of installation of the flooring or at any future date. Moisture vapor emission and moisture content testing must conform with the requirements of ASTM F-2170 (Relative Humidity Probe Test). If test results show excessive levels of moisture above 75% relative humidity content, apply Concord Terrazzo's recommended moisture vapor emission control material (MVS 601) based upon the highest test reading. If moisture levels are above 95% of relative humidity, please contact Concord Terrazzo.
5. Saw cutting of control joints must be done between 12 and 24 hours after placement of the concrete slab.

PART 2 – PRODUCTS

2.01 - MANUFACTURER

A. Specifications are based on Concord Terrazzo Co, Self-Priming TERRAZZCO® Groutless EZPour 158 Thin Set Epoxy Terrazzo Flooring System

1. TERRAZZCO® Brand Products is considered the approved quality standard for this job.

B. Precast Terrazzo

1. *Structurally Supported Stair Tread*
   a) *Quantity of Treads _____*
   b) *Thickness of tread ____ with ____ Safety Channels*
2. *Structurally Supported Stair Tread/Riser Combination*
   a) *Quantity of Tread/Riser Combination _____*
   b) *Thickness ___ with ____ Safety Channels*
3. *Self Supported Treads*
   a) *Quantity of Treads _____ with _____ Safety Channels*
   b) *Overall Thickness _____*
4. *Wall Base (4' increments minimum thickness 3/8")*
   a) *Option A – Flat Base height _____*
   b) *Option B – Cove Base ¾" radius height ____*
5. *Tiles - (3/8" thickness)*
   a) *Quantity _____*
   b) *Size (maximum size – 24" x 48") ____ x ____*

2.02 – MATERIALS

A. **EZPour Epoxy 158:** Epoxy resin binder 158 mixed according to Concord Terrazzo Company's recommendation and tested without aggregate added. Meets all of the following conditions: All specimens cured for 7 days at 75 degrees plus or minus 2 degrees Fahrenheit and 50% plus or minus 2% R.H. The product shall meet the following requirements:

Property	Test Method	NTMA Requirements
Hardness	ASTM D-2240 using Shore D Durometer	60-85
Tensile Strength	ASTM D-412 Specimen made using "C" die	3,000 psi Minimum
Compressive Strength	ASTM D-695 Specimen "B" cylinder	10,000 psi Minimum
Chemical Resistance	ASTM D-1308 seven days at room temperature by immersion method	No deleterious effects: Distilled Water Mineral Oil Isopropanol Ethanol 0.025 Detergent Solution 1% Soap Solution 10% Sodium Hydroxide 10% Hydrochloric Acid 30% Sulfuric Acid

1. Epoxy Resin mixed according to Concord Terrazzo Company's recommendations and blended with 3 volumes of Georgia White marble blended 60% #1 chip and 40% #0 chip, ground and grouted with epoxy resin according to 3.02 C-2. All specimens cured 7 days at 75 degrees plus or minus 2 degrees Fahrenheit and 50% plus or minus R.H. The finished epoxy terrazzo shall meet the following requirements:

Property	Test Method	NTMA Requirements
Flammability	ASTM D-635	Self-extinguishing, extent of burning .025 inches maximum.
Thermal Coefficient of Linear Expansion	ASTM-D-696	25 x 10-6 inches per inch per degree to 140 degrees Fahrenheit
Bond Strength	ACI Committee No. 403/503 Bulletin Title No.59-43 (Pages 1139-1141)	100% concrete failure minimum, with 300 PSI minimum tensile strength.

Note: This test is intended to evaluate the bond to the concrete subfloor and is to be tested at the discretion of the architect. A 100% concrete failure indicates a good bond

B. Floor Aid Flexible Membrane 528

1. Prevention of substrate cracks transfer to the finish floor system.

C. Moisture Vapor Shield 601

1. Retarder against moisture vapor transmission for concrete slabs having a relative humidity 75%-95%.

D. Aggregate (Marble, Glass, Shells, Metal or Plastic)

1. Size: To conform with NTMA gradation standards.
   i. *Note: See product information.*
2. Hardness according to ASTM C-24l Ha-10 minimum
   i. *Note: This test indicates the abrasion resistance of marble chips.*
3. 24 hours absorption rate not to exceed 0.75 percent.
4. Chips shall contain no deleterious or foreign matter.
5. Dust content less than 1% by weight.

E. Strips

1. Stop, pour and divider "L" type to accommodate design parameters: _____ gauge. [Select gauge, white alloy of zinc, aluminum, brass or plastic. Consult with Concord Terrazzo Company of epoxy resin if brass strips are desired.]

Note: SELECT GAUGE FROM FOLLOWING Gauge: 16 gauge or l/8, l/4, or 3/8 inch heavy top "L" type. 2. Construction joint double "L" strips (do not use neoprene joint filler material), back to back... 16 gauge white alloy of zinc or aluminum material.

2.03 – MIXES

A. Terrazzo Selection
Refer to the Terrazzo Mix Design for this project is below.
1.TERRAZZCO Sample # {_____}.
2.TERRAZZCO Sample # {_____}.
3.TERRAZZCO Sample # {_____}.
4.TERRAZZCO Sample # {_____}.

PART 3 – EXECUTION

3.01 – INSPECTION

A. Examine areas to receive terrazzo for:

1. Defects in existing substrate that affect proper performance of terrazzo system.
Note: Untreated cracks in substrate will usually be transmitted through topping to surface. TERRAZZCO Flexible Membrane #528 over cracks shall be used to minimize chance of subfloor cracks transferring to the terrazzo surface. In areas with cracks, use fiber glass.

2. Deviations beyond allowable tolerances for the concrete slab work.
Note: Subfloor not to vary more that 1/4 inch from true plane in 10 feet. Epoxy thin-set terrazzo, as specified, is not intended to level substrate and will only follow the contour of the concrete slab. Any work required to eliminate nonconformity of subsurface specifications is the responsibility of others. Any materials used to correct nonconformity must be compatible with terrazzo system selected and be approved by Concord Terrazzo Company.

B. Proceed with installation only when all defects have been corrected.

3.02 – INSTALLATION

A. Subfloor

1. Prepare substrate to receive epoxy terrazzo in accordance with Concord Terrazzo Company's recommendations.
2. Substrate Crack Repair: Hairline cracks less than 1/16" width may be filled with neat epoxy resin, EZpour #158. Treat cracks if wider than 1/16" width as recommended in NTMA Technical Bulletin #111 "Crack Detailing and Joint Treatments for Thin Set Terrazzo", Detail #6. Route out all cracks larger than 1/16" width and fill with rigid epoxy. Apply TERRAZZCO Flexible Epoxy #528 across the crack a minimum width of 24 inches at a spread rate of 35-45 square feet per gallon to achieve 40 mils dry film thickness over the crack and allow to cure. Optional reinforcement: Imbed fiberglass scrim cloth into wet primer and saturate with additional TERRAZZCO Flexible Membrane #528. Alternatively, scrim cloth may be gently placed onto surface of tacky TERRAZZCO Flexible Membrane #528 without pressing down into resin. Allow to cure.
    a) Alternate to Step #2: If cracks are too numerous to treat individually, apply TERRAZZCO Flexible Membrane #528 over entire floor surface as a crack isolation membrane following procedure outlined in step #2. Refer also to NTMA Technical Bulletin #111 "Crack Detailing and Joint Treatments for Thin Set Terrazzo", Detail #5.
3. Install divider strips over all concrete joints as recommended in NTMA Technical Bulletin #111 "Crack Detailing and Joint Treatments for Thin Set Terrazzo", Details #1-#7. Divider strips must be bonded to joint edges for contraction joints (aka control joints/sawcuts) and isolation joints (aka expansion joints) in subfloor. For contraction joints, refer to Details #1-#3. For Isolation joints, refer to Detail #4. For Construction joints (aka cold joints), refer to Detail #7. For exposed contraction joints, fill with TERRAZZCO Flex-a-fill Joint Filler #1200. Fill isolation joints with urethane sealant formulated for use in floor expansion joints supplied by others. Do not use prefabricated double divider strips filled with neoprene.
4. Install divider strips as shown on drawings.

B. Pouring Terrazzo

1. If required, install moisture vapor control material before other terrazzo system materials.
2. Place terrazzo mixture and trowel to a dense flat surface to the top of divider strips

C. Finishing

1. Rough Grinding:
   a) Grind with 24 or finer grit stones or with comparable diamond segments.
   b) Follow initial grind with 80 or finer grit stones or with comparable diamond plates.

2. Grouting:
   a) Cleanse floor with clean water and rinse.
   b) Remove excess rinse water, dry, and apply epoxy grout, supplied by Concord Terrazzo Company, to fill voids.

3. Cure Grout:
   Note: Grout may be left on terrazzo until all heavy and messy work in project is completed.

4. Fine Grinding
   a) Grind with 80 or finer grit stones or with comparable diamond segments until all grout is removed from surface. Continue polishing to specified grit level to match the approved sample(s).

D. Cleaning

1. pH factor between 7 and 10 where applicable.

2. Biodegradable and phosphate free.

3. Wash all surfaces with a neutral cleaner.

4. Rinse with clean water and allow surface to dry.

E. Sealer

Note: TERRAZZCO Brand Epoxy *floors should be sealed with a terrazzo sealer.* ***Caution:*** *Some finish systems require unsealed terrazzo for proper installation, to function as designed and to achieve the desired aesthetic effect, consult with Manufacturer of the finish system for requirements. Any sealer or finish system not supplied by Concord Terrazzo should be properly tested with a mock-up before use.*

1. pH factor between 7 and 10, where applicable.

2. Shall not discolor or amber.

3. Flash Point: ASTM D-56, 80 degrees Fahrenheit minimum, where applicable. DCOF testing was performed under ANSI A137.1-2012 parameters.

4. Special stain and/or chemical resistant sealers are needed for certain areas such as resistance to iodine or

F. Protection

1. Upon completion, the work shall be ready for final inspection and acceptance by the owner or its agent.

2. The installation of the terrazzo floor protection must be acceptable to the terrazzo installer and maintaining of such protection responsibility of others.

3.03 – PRECAST INSTALLATION

A. Install precast units based on recommendations by the National Terrazzo and Mosaic Association or TTMAC-Canada. Contact the manufacturer, Concord Terrazzo Company, for further details.

Miscellaneous:

A. TERRAZZCO Flexa-Flex Joint Filler 1200

1. Absorbs the impact and shock of heavy loads while sealing joints. If required is considered out of scope of standard epoxy terrazzo system.

B. TERRAZZCO EZpour Leveling Fill Epoxy 162

1. Recommend for concrete surface where a uniformly even substrate is desired. If required is considered out of scope of standard epoxy terrazzo system.

C. TERRAZZCO Bonding Agent 159

1. Designed to promote adhesion between concrete slab and the terrazzo mix. If required is considered out of scope of standard epoxy terrazzo system.

END OF SECTION 096600 / 096623

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