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SPECIAL PROVISION 09 66 23 - TERRAZZO FLOOR REPAIR AND REFINISH

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish all necessary materials, labor and equipment required to install, repair and refinish Terrazzo Flooring System.

1.2 QUALITY ASSURANCE

A. Manufacturer's Qualification: Obtain primary Epoxy Terrazzo Flooring System materials including membranes, primers, resins, hardening agents, specially blended aggregates and finish coats from a single manufacturer with a minimum of ten (10) years of experience providing resinous ground terrazzo flooring, Provide unblended aggregates, solvents and other secondary materials from a source recommended by the manufacturer of primary materials.

B. Terrazzo Contractor Qualifications: Installation shall be performed by an applicator with not less than ten (10) years of satisfactory experience in the application of resinous epoxy terrazzo and shall show proof of continuous N.T.M.A. membership during the same period. The applicator shall be approved by the manufacturer of the Epoxy Terrazzo Flooring System. Applicator shall demonstrate experience during the last five years of at least three projects of comparable scope and complexity of at least 50% of the total square footage of this project. (See experience criteria in Submittals section.)

C. Concrete substrate to be clean and level (maximum variation not to exceed 1/4 inch in 10 feet) and to have a steel trowel finished surface. No curing agents or other additives which could prevent bonding should be used. The slab should have an efficient moisture barrier 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.]

1.3 SUBMITTALS

A. Manufacturer’s data for flooring system, including the following:

1. Physical Properties

2. Performance Properies

3. Specified Tests

4. Material Safety Data Sheet

5. Manufacturer’s Standard Warranty

System will be evaluated on the basis of these standards. For tests not listed in the manufacturer's standard nationally published data, the manufacturer must supply the missing data from an independent test laboratory tested according to the referenced standard.

B. Shop Drawings:

1. Submit shop drawings for layout of divider strips, control joint strips and base and border strips if required.

2. Submit shop drawings of all terrazzo work.

C. Samples:

1. Submit a sample - minimum 6" X 6" for each color and type of terrazzo

2. Submit a 6-inch length of each type and kind of divider strips, stop strip, or control joint strip.

3. Submit a 12" long sample of precast terrazzo base or other precast items required.

D. Submit (3) three copies of N.T.M.A. maintenance recommendations and (3) three copies of manufacturer's maintenance instructions.

E. Terrazzo Contractor Experience: Furnish list of (3) three epoxy terazzo projects using material specified or similar for this project that contractor has installed during the past 5 years of the same scope, complexity and at least 50% of the square footage, including the following:

1. Project name.

2. Square footage of terrrazzo installed.

3. Lineal footage of precast base and cast in place base.

4. Address at facility with contact name and phone number.

5. Contact name, address and phone number of primer contractor or construction manager.

1.4 WARRANTY

A. The applicator jointly with the manufacturer shall furnish a standard guarantee of the Epoxy Terrazzo Flooring System for a period of one year after installation. This labor and material guarantee includes loss of bond and damage due to normal wear and tear.

B. Not included is damage due to bubbling or loss of adhesion due to moisture penetration through the substrate, Acts of God or other elements beyond the scope of protection of this system. Also excluded are reflective cracks from the structural slab.

C. In case of a warranty claim, the owner will notify the manufacturer and applicator in writing within 30 days of the first appearance of any problems which are covered under this warranty, and will provide free access to the area during normal working hours. Property protection is also the owner’s responsibility. Remedy is limited to direct repair of the Epoxy Terrazzo Flooring System.

1.5 MATERIAL DELIVERY, HANDLING AND STORAGE

A. Primary system materials shall be delivered in the manufacturer's undamaged, unopened containers. Each container shall be clearly marked with the following:

1. Product name
2. Manufacturer's name
3. Component designation (A or B, etc.)
4. Ratio of component mixture
5. CHEMTREC Emergency Response Information

B. Inspect all direct job site deliveries to assure that quantities are correct and that materials comply with requirements and are not damaged.

C. Replace all such material that is found to be defective in manufacture or that has become damaged in transit, handling or storage.

D. Store materials per manufacturer's instructions, and as follows:

1. Seals and labels intact and legible.
2. Maintain temperature of storage area between 60 degrees F and 90 degrees F.
3. Do not use materials which have been stored for a longer period of time than the manufacturer's maximum recommended shelf life.

1.6 JOB CONDITIONS

A. Pre-Installation conference shall be required with General Contractor, Owners Representative, Flooring Contractor and Manufacturer's Representative to review the following:

1. Evaluate slab conditions and extent of repairs necessary for Contractor to begin normal preparation and installation of terrazzo flooring.
2. Evaluate detail conditions at all penetrations, terminations, perimeter and drain locations. Detail problems should be documented and resolved prior to floor installation.
3. Test concrete subfloors to verify that slab moisture content does not exceed that recommended by flooring manufacture.
4. Review job site conditions, including temperature, power, and lighting, necessary for a successful installation.

B. Protect surrounding substrate and surfaces, as well as in place equipment, from damage during surface preparation and system installation.

C. All drains must be working and set at same elevation as final floor finish.

D. Job area shall be free of other trades during floor installation, and for a period of 48 hours upon completion.

E. General Contractor shall provide adequate ventilation by use of fans or other devices.

F. General Contractor shall maintain lighting at a minimum uniform level of 50 - 60 foot-candles in areas where flooring system is being installed. If possible, schedule installation so that permanent lighting will be operational during installation.

G. General Contractor shall ensure that leaks from pipes and other sources are corrected prior to floor installation.

H. General Contractor shall provide minimum substrate and atmospheric temperature of 65°F and relative humidity below 85% during floor installation and until final acceptance.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Systems Overview: The existing terrazzo floors shall be replaced, repaired and refinished as shown on the drawings. Terrazzo installed at a thickness of 3/8" over existing structural slabs where shown on the finish schedule and drawings. Terazzo that is to be replaced or patched shall match existing floor and shall include #0, #1 and #2 marble chips with proportions and colors to match existing floors or new blend per Section 2.02. The finished floor surface shall be dense, non-porous and chemical resistant. Prior to system application, cracks are to be treated with Semi-rigid Epoxy as described in EXECUTION section. Referenced joints shall be filled Terroxy Control Joint Filler, flexible epoxy joint filler. After repair and replacement of terrazzo panels, refinish and repolish designated existing terrazzo floors.

B. The system shall have the following performance properties:

Curing Shrinkage, ASTM D-531	< .005 in/in
Impact Resistance, Gardener Impact Tester	Withstands 100 in./lbs. no cracking, delamination or chipping.
Abrasion Resistance, ASTM-D-4060	.045 gm.
Critical Radiant Flux, ASTM-D-648	.90% max. (25 hours immersion)
Electrical Conductivity	Non-conductive. *(Conductive formulation available.)*
Flexural Yield Strength, ASTM-C-580, psi	6,700
Thermal Coefficient of Expansion, ASTM-C-531, in/in/F	20×10^{-6}

C. The epoxy resin binder shall have the following physical properties:

Compressive Strength, ASTM-D-695	12,000 psi
Tensile Elongation, ASTM-D-638	6%
Ultimate Tensile Strength, ASTM-D-638	4,800 psi
Flexural Modulus, ASTM-D-790	2.5×10^5
Hardness, ASTM-D-2240	88 Shore D
Curing Shrinkage, ASTM D-531	< .005 in/in

D. Marble Chips:

1. Sizes shall be #2's, #1's and 0's, conforming with N.T.M.A. standards.
2. ASTM-C-241 with Ha-10 minimum.
3. 24-hour absorption rate not to exceed 0.075 percent.
4. Chips shall contain no deleterious or foreign matter.
5. Dust content less than 1% by weight.
6. Label bags legibly with correct name and size of chip.

E. Strips:

1. Stop and divider "L" strips: Zinc or aluminum to match existing strips. Width to match existing per location or as shown on the finish schedule 16 gauge or 1/8, 1/4, or 3/8-inch heavy top "L" type x 3/8 inch high.
2. Control Joint Double "L" Strips, back to back with ¼" between and 3/8" high with flexible epoxy sealant in color approved by architect.
3. Anchoring Device: Configuration or attachment shall provide for secure system of anchoring all strips in floor.
4. Strip Adhesive: 100% solids epoxy as recommended by manufacturer.

F. Flexible Epoxy Membrane: Terroxy Iso-Crack Epoxy Membrane, 100% solids for crack penetration.

G. Primer: Terroxy Primer, 100% solids. No solvent containing primers are allowed.

H. Terrazzo Cleaner:

1. Ph factor between 7 and 10.

2. Free form crystallizing salts or water-soluble alkaline salts.

3. Biodegradable and phosphate free.

I. Epoxy Grout: Epoxy Grout, 100% solids. No solvent containing, cement or latex grouts are allowed.

J. Sealer: Terroxy Water-Based Acrylic +

2.2 MIXES

A. Mix Ratios are intended to match the existing as closely as possible.

PART 3 - EXECUTION

3.1 INSPECTION, REPAIR & REFINISHING

A. Strip any existing sealers and waxes from floor and/or base.

B. Reinspect the floor for damage. Any areas which have been damaged more than 1/8" into the system or which are unsound should be cut out and replaced with Terroxy resin and aggregate to match the original.

C. Preparation:

1. Remove entire terrazzo panels from strip to strip when identified in the project plans.

2. Remove damaged terrazzo when patching within a panel. If patch is within 3" of existing strip remove terrazzo to the strip.

3. Sawcut at 90^0 edges of existing terrazzo at perimeter of patches to a minimum of 3/8" deep for existing epoxy terrazzo.

4. Angle cut all straight cuts that do not align with a strip or termination to create jagged, "shark tooth" edge.

5. Remove remaining terrazzo and any contamination inside of areas to be repaired or repoured and prepare mechanically as required.

D. Crack and Joint Repair:

1. If there are cracks or joints within the patch, prepare crack until sound. Crack shall then be repaired according to the following:
a. Hairline cracks shall receive detail coat of epoxy primer with 3" fiberglass tape.
b. Fill cracks greater than hairline but less than 1/16" wide after surface preparation with neat, Iso Crack Epoxy Membrane. Place detail coat of Membrane over crack and embed 3" fiberglass tape.
c. Fill cracks and joints greater than 1/16" with Iso Crack Epoxy Membrane. Place

12" wide detail coat of Membrane over crack or joint and embed Detail Cloth over crack into wet epoxy, allow cloth to remain exposed on the surface of Membrane.

E. Strip Installation: Where strips have been removed, reinstall according to original strip type and layout.

F. Priming: After surface is prepared and completely dry, prime with Terroxy Primer. Use paint brush at perimeter edges to lightly coat shark tooth but taking care to keep off of existing adjacent terrazzo surface. Apply only primer that can be topped with Terroxy Epoxy Terrazzo within recoat window.

G. Matrix Installation: Mix Terroxy Epoxy Terrazzo and chips to match original according to standard Terroxy installation instructions. Allow to cure.

H. Grinding Terrazzo Floors:

1. Grind terrazzo floors with 80 grit metal bond diamond discs.

I. Grouting:

1. Cleanse floor with clean water and rinse thoroughly.

2. Remove excess rinse water by wet vacuum and allow surface to dry thoroughly.

3. Machine or hand-apply epoxy grout in color to match original matrix, or as directed by architect, to fill voids.

J. Polishing:

1. Polish floors and base using 100 grit resin pads to remove grout. Repeat grout and initial polish if large voids are present after initial polishing.

2. Continue polishing floor process to a minimum 200 grit finish.

K. Cleaning:

1. Thoroughly wash all surfaces with a neutral cleaner after fine grinding.

2. Rinse with clean water and allow surface to dry thoroughly.

L. Sealer:

1. Apply 2 coats of Terroxy Water-Based Acrylic Plus Sealer per manufacturers' instructions.

M. Protection: Upon completion the work shall be ready for final inspection and acceptance by the owner or his agent. The General Contractor shall protect the finished floor from the time that the terrazzo contractor completes the work and requests final inspection.

END OF SECTION