SECTION 09 66 13.19
BONDED TERRAZZO FLOORING

THIS GUIDE SPECIFICATION HAS BEEN PREPARED BY THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION, INC., AND IS DISTRIBUTED FOR USE BY ITS MEMBERS AND DESIGN PROFESSIONALS. IT CONTAINS REQUIREMENTS RELATED TO THE USGBC'S LEED® CERTIFICATION PROGRAMS.

SPECIFIER'S NOTE: REVISE THIS SECTION BY DELETING AND INSERTING TEXT TO MEET PROJECT SPECIFIC REQUIREMENTS.

SPECIFIER'S NOTE: BONDED TERRAZZO FLOORING INSTALLATIONS ARE A MINIMUM OF 1-3/4 INCHES THICK (1/2 INCH NOMINAL TERRAZZO TOPPING, 1-1/4 INCH NOMINAL UNDERBED). SEE ARCHITECTURAL DETAILS. THIS SPECIFICATION INCLUDES PRECAST TERRAZZO UNITS.

SPECIFIER'S NOTE: CONCRETE SUBFLOORS TO RECEIVE BONDED TERRAZZO FLOORING SHALL NOT VARY MORE THAN 1/4 INCH FROM TRUE PLANE IN 10 FOOT SPAN AND SHALL RECEIVE A BROOM FINISH.

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Portland cement terrazzo, bonded installation with divider and accessory strips.

SPECIFIER'S NOTE: DELETE FOLLOWING IF PRECAST TERRAZZO UNITS ARE NOT INCLUDED.

2. Precast terrazzo units.

B. Related Requirements:

SPECIFIER'S NOTE: DELETE NON APPLICABLE ITEMS FROM THE FOLLOWING LIST.

1. Attach metal stairs including any welding and/or reinforcing, Section <**Insert Section No. Here**>.
2. Provide floor drains at portland cement terrazzo flooring, Section <**Insert Section No. Here**>.
3. Provide surface hardware at portland cement terrazzo flooring, Section <**Insert Section No. Here**>.
4. Set architectural reveals or metal base beads requiring installation prior to wall surface, Section <**Insert Section No. Here**>.
5. Concrete subfloor, Section <**Insert Section No. Here**>
6. Stair Nosing-Miscellaneous Metals, Section **<Insert Section No. Here>**

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1.02 DEFINITIONS

A. NTMA: National Terrazzo and Mosaic Association, Inc.

1.03 PREINSTALLATION MEETINGS

A. Pre installation Conference: The General Contractor shall conduct a conference at project site before Terrazzo Contractor begins installation.

1. The General Contractor shall invite Terrazzo Contractor, the Architect and representatives of the Owner.
2. Review methods and procedures related to terrazzo including, but not limited to, the following:

   a. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
   b. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
   c. Review terrazzo mixes and patterns.
   d. Review custom terrazzo mixes, designs and patterns.
   a. Coordination with the work of other trades.

1.04 ACTION SUBMITTALS

A. Product Data: Terrazzo Contractor shall submit Product Data for each type of product required for installation including:

SPECIFIER'S NOTE: RETAIN ONLY THOSE ITEMS WHICH APPLY TO PROJECT IN THE FOLLOWING LISTING.

1. Strip materials
2. Sealer
3. Cement

B. LEED Submittals: Terrazzo Contractor shall submit the following:

SPECIFIER'S NOTE: RETAIN ONLY THOSE SUBMITTALS WHICH APPLY TO PROJECT IN THE FOLLOWING LISTING.

1. Product Data for Credit MR 4: For products having recycled content, submit documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

   a. Include statement indicating cost for each product having recycled content.

2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, submit documentation indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material.

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a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

SPECIFIER'S NOTE: "PRODUCT DATA FOR CREDIT IEQ 4.1" SUBPARAGRAPH BELOW APPLIES TO LEED-NC, LEED-CI, AND LEED-CS; COORDINATE WITH REQUIREMENTS FOR ADHESIVES.

3. Product Data for Credit IEQ 4.1: For adhesives, submit documentation including printed statement of VOC content.

SPECIFIER'S NOTE: "PRODUCT DATA FOR CREDIT IEQ 4.3" SUBPARAGRAPH BELOW APPLIES TO LEED-NC, LEED-CI, AND LEED-CS; COORDINATE WITH REQUIREMENTS FOR SEALERS.

4. Product Data for Credit IEQ 4.3: For sealers, submit documentation including printed statement of VOC content.

SPECIFIER'S NOTE: "LABORATORY TEST REPORTS FOR CREDIT IEQ 4" SUBPARAGRAPH BELOW APPLIES TO LEED FOR SCHOOLS.

5. Laboratory Test Reports for Credit IEQ 4: For flooring system including adhesives and sealers, submit documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

SPECIFIER'S NOTE: SHOP DRAWINGS MAY NOT BE REQUIRED FOR SMALL AREAS OR SIMPLE DESIGNS. DELETE FOLLOWING PARAGRAPH IF SHOP DRAWINGS ARE NOT REQUIRED.

C. Shop Drawings: Terrazzo Contractor shall prepare and submit Shop Drawings that include plans, elevations, sections, component details, and attachments to other work. Include terrazzo installation requirements. Show layout of the following:

SPECIFIER'S NOTE: RETAIN ONLY THOSE ITEMS WHICH APPLY TO PROJECT IN THE FOLLOWING LISTING.

1. Divider strips.
2. Expansion-joint strips.
3. Accessory strips.
4. Abrasive strips.
5. Stair treads, risers and landings.
6. Terrazzo patterns.
7. <**Insert requirements**>

SPECIFIER'S NOTE: KEEP PARAGRAPH BELOW FOR RELATIVELY SMALL AND SIMPLE PROJECTS WHERE TERRAZZO COLORS AND PATTERNS HAVE ALREADY BEEN SELECTED. DELETE PARAGRAPH IF KEEPING "SAMPLES FOR INITIAL SELECTION" OR "SAMPLES FOR VERIFICATION" PARAGRAPHS BELOW.

D. Samples:

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1. Terrazzo Contractor shall prepare and submit a maximum of three samples, sizes [**6 by 6 inches**] [**12 by 12 inches**] for each color and type of terrazzo specified.

SPECIFIER'S NOTE: DELETE FOLLOWING PARAGRAPH IF PRECAST TERRAZZO IS NOT USED.

2. Terrazzo Contractor shall submit three samples, sizes **[6 by 6 inches] [12 by 12 inches]** for each color and type of precast terrazzo specified.

SPECIFIER'S NOTE: KEEP PARAGRAPH BELOW FOR PROJECTS WHERE TERRAZZO COLORS WILL BE SELECTED DURING CONSTRUCTION FROM NTMA COLOR PLATES. DELETE PARAGRAPH WHERE TERRAZZO COLORS HAVE BEEN SELECTED AND ARE INDICATED ON THE DRAWINGS AND SPECIFICATIONS.

E. Samples for Initial Selection: Terrazzo Contractor shall submit NTMA "Color Palette Brochure" showing full range of colors and patterns available for each terrazzo type.

SPECIFIER'S NOTE: KEEP PARAGRAPH BELOW FOR LARGER AND MORE COMPLEX PROJECT. DELETE PARAGRAPH WHERE TERRAZZO COLORS HAVE BEEN SELECTED AND ARE INDICATED ON THE DRAWINGS AND SPECIFICATIONS.

F. Samples for Verification: Terrazzo Contractor shall prepare and submit samples for each type, material, color and pattern of terrazzo and accessory required showing the full range of color, texture and pattern variations expected.

1. Terrazzo: [**6 by 6 inch**] [**12 by 12 inch**] samples
2. Accessories: 6 inch long Samples of each type and kind of exposed strip item required

SPECIFIER'S NOTE: DELETE FOLLOWING PARAGRAPH IF PRECAST TERRAZZO IS NOT USED.

3. Precast Terrazzo Units: Samples, sizes **[6 by 6 inches] [12 by 12 inches]** for each color and type of precast terrazzo specified.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: Terrazzo Contractor shall submit two copies of qualification data.

1. Include list of projects indicating name and location of project, name of Owner, name and contact information for General Contractor, and name and contact information for Architect.
2. Include letter from NTMA with the name of the Project and name of member, stating current member status.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Literature: Terrazzo Contractor shall submit two copies of NTMA maintenance recommendations.

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1.07 QUALITY ASSURANCE

A. Acceptable Suppliers: A firm experienced in manufacturing products in accordance with NTMA standards and with a record of successful in-service performance, as well as sufficient production capacity to produce required materials.

B. Acceptable Terrazzo Contractor: A Contractor Member of NTMA whose work has resulted in construction with a record of successful in service performance.

1. Installer shall have completed terrazzo installations within the past five years of scale and complexity similar to the proposed installation.

C. Source Limitations for Aggregates: Terrazzo Contractor shall obtain each color, grade, type, and variety of granular materials from sources capable of providing materials of consistent quality in appearance and physical properties.

SPECIFIER'S NOTE: SIZE OF MOCKUP SHOULD BE DEPENDENT TO NUMBER OF COLORS AND PATTERNS. USUALLY A MOCKUP OF 50 TO 100 SQ. FT. SHOULD BE SUFFICIENT. DETAIL MOCKUP DESIRED ON DRAWINGS. KEEP REQUIREMENTS FOR MOCKUP FOR LARGER AND MORE COMPLEX PROJECTS.

D. Mockups: Terrazzo Contractor shall construct mockup if required in bid or scope of work documents to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup as indicated on Drawings.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to Project site in supplier's original wrappings and containers, labeled with source or manufacturer's name, material or product brand name and lot number, if any.

B. Materials shall be stored in their original, undamaged packages and containers.

1.09 PROJECT CONDITIONS

A. General Contractor shall provide 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.

B. General Contractor shall provide temporary enclosures and other suitable methods to protect adjacent spaces from damage during installation.

1. Maintain ambient temperatures in the area to receive terrazzo at not less than 50 deg. F.
2. Maintain adequate ventilation in the area to receive terrazzo.

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C. Terrazzo Contractor shall protect other adjacent work from water and dust generated by grinding operations.

1.10 GUARANTEE

A. One year from date of completion of terrazzo installation.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Recycled Content of Portland Cement Terrazzo Flooring Materials: Provide aggregates with a postconsumer recycled content plus one-half of preconsumer recycled content not less than <**Insert number**> percent.

B. Regional Materials: Provide [**portland cement**] [**marble chips**] [**decorative aggregate**] [**and**] [**sand**] that has been extracted, harvested, or recovered, as well as manufactured within 500 miles of Project site.

SPECIFIER'S NOTE: RETAIN "LOW-EMITTING MATERIALS" PARAGRAPH BELOW IF REQUIRED FOR LEED FOR SCHOOLS CREDIT IEQ 4.

C. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.02 MATERIALS

SPECIFIER'S NOTE: SELECT WHITE OR GRAY CEMENT. BOTH WHITE AND GRAY PORTLAND CEMENT MAY NOT BE UNIFORM IN COLOR AND MAY PRODUCE A VARIATION OF SHADE IN THE MATRIX.

A. Portland Cement: ASTM C 150, Type 1, [**white**][**gray**].

B. Water: Potable

C. Sand: ASTM C 33/C33M, clean, washed and locally available

SPECIFIER'S NOTE: RETAIN "RECYCLED CONTENT OF PORTLAND CEMENT TERRAZZO FLOORING" SUBPARAGRAPH BELOW TO SPECIFY RECYCLED CONTENT IF APPLYING FOR LEED CREDIT MR 4.

D. Marble Chips:

SPECIFIER'S NOTE: STANDARD MARBLE AGGREGATES ARE NO. 1 AND NO. 2 SIZE UNLESS SPECIFIED OTHERWISE.

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1. Size: NTMA gradation standards
2. Abrasion and Impact Resistance: Not more than 40 percent loss when tested in accordance with ASTM C 131
3. Chips shall contain no deleterious or foreign matter

SPECIFIER'S NOTE: PORTLAND CEMENT TERRAZZO USUALLY ONLY INCLUDES MARBLE CHIPS. OTHER DECORATIVE MATERIALS (SYNTHETIC SHIPS, METAL, GLASS, PORCELAIN, ETC.) THAT DO NOT COMPLY WITH REQUIREMENTS SPECIFIED ABOVE MAY BE USED AFTER CONSULTING WITH THE TERRAZZO CONTRACTOR FOR SPECIFIC USAGE GUIDELINES AND RECOMMENDATIONS.

E. Divider Strips:

1. Material: [**Zinc**][**Brass**].
2. Strip Thickness: [**16 gauge**].

SPECIFIER'S NOTE: DELETE FOLLOWING SUBPARAGRAPH IF HEAVY TOP DIVIDER STRIPS ARE NOT USED

3. Heavy Top Thickness: [**1/8 inch**] [**1/4 inch**] [**3/8 inch**].
4. Depth: 1-1/4 inches.

SPECIFIER'S NOTE: SELECT PARAGRAPH ABOVE AND DELETE FOLLOWING FOR STANDARD 1/2 INCH TOPPING OR DELETE ABOVE AND RETAIN FOLLOWING PARAGRAPH FOR 3/4 INCH VENETIAN TOPPING.

5. Depth: 1-1/2 inches.

SPECIFIER'S NOTE: DELETE FOLLOWING IF ABRASIVE STRIPS ARE NOT INCLUDED.

F. Abrasive Strips: [**Three-line**] [**Two-line**] [**One-line**] [**Abrasive nosing strip and two-line**] <**Insert requirements**> abrasive inserts at nosing. Silicon carbide or aluminum oxide, or combination of both, in epoxy resin binder and set in channel

1. Width: 1/2 inch.
2. Depth: As required by terrazzo thickness.
3. Length: **[4 inches less than stair width] [As indicated]** <**Insert dimension**>.
4. Color: [**Black**] [**Darker than terrazzo, as selected by Architect**] <**Insert requirements**>

G. Colorants: Alkali-resistant color stable pigments.

SPECIFIER'S NOTE: RETAIN THE FOLLOWING ONLY FOR POURED-IN-PLACED INSTALLATIONS OVER STEEL STAIRS.

H. Steel Wire Lath: ASTM A 185, galvanized welded wire mesh, 2 by 2 by 16 ga.

SPECIFIER'S NOTE: CURING MAY NOT BE NECESSARY UNDER VERY HUMID CONDITIONS.

I. Curing Materials: Water or polyethylene sheeting.

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SPECIFIER'S NOTE: DELETE FOLLOWING PARAGRAPH IF PRECAST TERRAZZO UNITS ARE NOT REQUIRED..

2.03 PRECAST TERRAZZO

A. General: Terrazzo Contractor shall provide precast terrazzo units as indicated on Drawings and as specified.

B. Precast Terrazzo Base: Minimum 3/4-inch-thick, reinforced, portland cement terrazzo units cast in maximum lengths possible, but not less than 36 inches. Comply with manufacturer's written recommendations for fabricating precast terrazzo base units in sizes and profiles indicated.

1. Type: [**As indicated**] [**Coved with minimum 3/4-inch radius**] [**Straight**] [**Splayed**] <**Insert requirements**>.

SPECIFIER'S NOTE: RETAIN FIRST OPTION IN "TOP EDGE" SUBPARAGRAPH BELOW IF TOP EDGE IS CONCEALED.

2. Top Edge: [**Straight, unfinished**] [**Beveled with polished top surface**] [**Radius edge with polished top surface**] <**Insert requirements**>.
3. Outside Corner Units: With finished returned edges or mitered at outside corner.
4. Color, Pattern, and Finish: [**As selected by Architect from full range of industry colors**] [**Match Architect's sample**] [**Match adjacent poured-in-place terrazzo flooring border**] [**Match adjacent poured-in-place terrazzo flooring field**] [**As indicated**]<**Insert requirements**>.

RETAIN "PRECAST TERRAZZO UNITS" PARAGRAPH BELOW FOR PRECAST TERRAZZO STAIR TREADS, RISERS, OR LANDINGS. FOLLOWING ASSUMES THAT PRECAST UNITS ARE FULLY SUPPORTED. DETAIL PROFILE, ANCHORAGE, AND OTHER REQUIREMENTS ON DRAWINGS OR INSERT BELOW. COPY AND RE-EDIT IF MORE THAN ONE TYPE IS REQUIRED; INSERT A UNIQUE DESIGNATION FOR EACH TYPE AND INDICATE LOCATIONS ON DRAWINGS. PRECAST TERRAZZO STAR UNITS ARE RECOMMENDED FOR INSTALLATION OVER CONCRETE, STEEL PLATE, OR STEEL PAN STAIRS.

C. Precast Terrazzo Stair Units: Minimum [**2-inch-**] <**Insert dimension**> thick, reinforced, portland cement terrazzo stair units. Comply with manufacturer's written recommendations for fabricating precast terrazzo units in sizes and profiles indicated. Reinforce units as required by unit sizes, profiles, and thicknesses and as recommended by manufacturer. Finish exposed-to-view edges and reveals to match face finish. Ease exposed edges to 1/8-inch radius.

1. Provide the following types of precast stair units:

a. Stair treads.
b. Stair risers.
c. Stair landings.
d. <**Insert item**>.

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SPECIFIER'S NOTE: COORDINATE "COLOR, PATTERN, AND FINISH" SUBPARAGRAPH BELOW WITH ANY PRECAST UNITS IN LIST ABOVE. RE-EDIT IF TREADS, RISERS, OR LANDING UNITS ARE DIFFERENT.

2. Color, Pattern, and Finish: [**As selected by Architect from full range of industry colors**] [**Match Architect's sample**] [**Match adjacent poured-in-place terrazzo flooring border**] [**Match adjacent poured-in-place terrazzo flooring field**] [**As indicated**]<**Insert requirements**>.

SPECIFIER'S NOTE: KEEP ONE OF THE FOLLOWING TYPES OF SETTING MATERIALS FOR INSTALLING PRECAST TERRAZZO OR KEEP BOTH IF SETTING MATERIAL IS TERRAZZO CONTRACTOR'S OPTION.

SPECIFIER'S NOTE: EPOXY IS RECOMMENDED FOR INSTALLATION OVER STEEL SUBSTRATES BUT CAN BE USED WITH OTHER SUBSTRATES. THIN SET MORTAR IS NOT RECOMMENDED FOR METAL SUBSTRATES,

D. Setting Materials for Precast Terrazzo:

1. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

SPECIFIER'S NOTE: EPOXY IS RECOMMENDED FOR INSTALLATION OVER STEEL SUBSTRATES BUT CAN BE USED WITH OTHER SUBSTRATES. THIN SET LATEX-PORTLAND CEMENT MORTAR IS NOT RECOMMENDED FOR METAL SUBSTRATES.

2. Epoxy Adhesive: Two component, compatible with terrazzo units and substrate[**.**][**, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).**][**, that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."**]

2.04 MISCELLANEOUS ACCESSORIES

A. Sealer: Terrazzo Contractor shall provide a non-ambering, clear sealer that is chemically neutral; does not impair terrazzo aesthetics or physical properties; is recommended by terrazzo matrix manufacturer. Sealers shall comply with the following:

1. Comply with requirements of authorities having jurisdiction.

2. Comply with ASTM D 2047.

SPECIFIER'S NOTE: RETAIN ONLY ONE OPTION IN THE FOLLOWING PARAGRAPH.

3. Water Based Sealer Properties: With pH factor between 7 and 10.

SPECIFIER'S NOTE: RETAIN ONLY PARAGRAPH ABOVE TO RESTRICT SEALERS TO THOSE THAT ARE WATER BASED. RETAIN PARAGRAPH BELOW IF SOLVENT BASED SEALERS ARE PERMITTED.

4. Solvent Based Sealer Properties: Flashpoint at 80 deg. F according to ASTM D 56.

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SPECIFIER'S NOTE: RETAIN PARAGRAPH BELOW IF REQUIRED FOR LEED-NC, LEED-CI, OR LEED-CS CREDIT IEQ 4.3.

5. Sealers shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.05 MIXES

A. Terrazzo Selection: Terrazzo Contractor shall provide terrazzo mix(es) according to the following:

SPECIFIER'S NOTE: NOTE: SELECT TYPE OR TYPES: STANDARD OR VENETIAN. VENETIAN TERRAZZO PERMITS A LARGER AGGREGATE SIZE AND REQUIRES A THICKER (3/4 INCH) TOPPING

1. Type: [**Standard**][**Venetian**].

SPECIFIER'S NOTE: USUALLY KEEP ONLY ONE OF THE FOLLOWING SUBPARAGRAPHS FOR SPECIFYING TERRAZZO MIX COLOR.

SPECIFIER'S NOTE: RETAIN FOLLOWING IF SPECIFYING A COLOR FROM A NTMA PLATE NO.

2. NTMA Plate No. <**Insert standard terrazzo or Venetian terrazzo plate no.**>.

SPECIFIER'S NOTE: RETAIN FOLLOWING IF COLOR WILL BE CHOSEN FROM A NTMA PLATE NO. AFTER CONTRACT IS AWARDED.

3. Mix Color: [**As selected by Architect from NTMA standard-terrazzo plates**] [**As selected by Architect from NTMA Venetian-terrazzo plates**] <**Insert NTMA color plate designation**>

SPECIFIER'S NOTE: RETAIN FOLLOWING IF A CUSTOM COLOR HAS BEEN CHOSEN AND A MIX WILL BE SPECIFIED. MODIFY AS REQUIRED FOR DESIRED MIX. PERCENTAGES MUST ADD UP TO 100 PERCENT. COPY IF ADDITIONAL MIX REQUIREMENT ARE NEEDED. DO NOT KEEP THE FOLLOWING IF CHOOSING FROM NTMA'S STANDARD TERRAZZO PLATES.

4. Custom Mix Color and Pattern:

   a. Color No. 1:
      1) Cement Color: [**White**][**Gray**]
      2) Chips: [**No. 1**][**No. 2**] <**insert name of chip**> <**insert percentage**> percent.
      3) Chips: [**No. 1**][**No. 2**] <**insert name of chip**> <**insert percentage**> percent.
      4) Chips: [**No. 1**][**No. 2**] <**insert name of chip**> <**insert percentage**> percent.

   b. Color No. 2:
      1) Cement Color: [**White**][**Gray**].
      2) Chips: [**No. 1**][**No. 2**] <**insert name of chip**> <**insert percentage**> percent.
      3) Chips: [**No. 1**][**No. 2**] <**insert name of chip**> <**insert percentage**> percent.
      4) Chips: [**No. 1**][**No. 2**] <**insert name of chip**> <**insert percentage**> percent.

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c. Color for Base:
   1) Cement Color: [**White**][**Gray**].
   2) Chips: No. 1 <**insert name of chip**> <**insert percentage**> percent.
   3) Chips: No. 1 <**insert name of chip**> <**insert percentage**> percent.
   4) Chips: No. 1 <**insert name of chip**> <**insert percentage**> percent.

SPECIFIER'S NOTE: RETAIN FOLLOWING IF A CUSTOM COLOR HAS BEEN CHOSEN AND MATCHING AN APPROVED SAMPLE WILL BE REQUIRED OR IF TERRAZZO IS REQUIRED TO MATCH AN EXISTING INSTALLATION.

5. Custom Mix Color and Pattern: [**Match Architect's sample**] [**Match existing**].

B. Proportions: Terrazzo Contractor shall proportion materials for underbed and topping mixes as follows:

1. Underbed: One part portland cement to four parts sand and sufficient water to provide workability at as low a slump as possible.
2. Terrazzo Topping: One 94-lb. bag of portland cement per 150 lb. of marble chips[**, color pigment]** and sufficient potable water to produce a workable mix

C. Mixing: Terrazzo Contractor shall mix underbed and topping as follows:

1. Underbed:

   a. Charge and mix sand and Portland cement.
   b. Add water and mix.

2. Terrazzo Topping:

   a. Charge and mix marble chips, Portland cement and color pigment if required
   b. Add water and mix to a uniform workable consistency

PART 3 - EXECUTION

3.01 EXAMINATION

A. The General Contractor and Architect shall examine substrates and areas, with Terrazzo Contractor present, for compliance with requirements for installation tolerances and other conditions affecting performance of the work.

1. Verify that concrete surfaces to receive bonded terrazzo flooring are sound, free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil and other contaminants incompatible with terrazzo flooring materials. Concrete substrate shall have a troweled finish.

B. Terrazzo Contractor shall proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

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3.02 PREPARATION

A. General Contractor shall broom clean area to receive terrazzo to remove loose chips and all foreign matter.

3.03 POURED-IN-PLACE TERRAZZO INSTALLATION

A. Underbed: Terrazzo Contractor shall place underbed as follows:

1. Thoroughly saturate concrete subfloor with water, slush and broom with neat cement paste.
2. Place underbed mix.

SPECIFIER'S NOTE: SELECT 1/2 INCH FOR STANDARD TOPPING OR 3/4 INCH FOR VENETIAN TOPPING IN FOLLOWING SUBPARAGRAPH.

3. Screed underbed to elevation of **[1/2 inch] [3/4 inch]** below finished floor elevation or slope and firmly compact.
4. Install divider strips as shown on drawings in semi-plastic underbed trowel firmly along edges.
5. Install control joint strips back to back precisely above subfloor joints taking care that control joint is full depth of underbed.

B. Strip Materials: Terrazzo Contractor shall install strip materials as follows:

1. Divider and Control Joint Strips:

a. Locate divider strips in locations indicated.
b. Install control joint strips back to back in locations indicated.
c. Install strips in semi-plastic underbed.

SPECIFIER'S NOTE: RETAIN "ACCESSORY STRIPS" SUBPARAGRAPH BELOW FOR ACCESSORY STRIPS.

2. Accessory Strips: Install as required to provide a complete installation.

C. Placing Terrazzo:

1. Dampen underbed with water.
2. Place terrazzo mixture in panels formed by divider strips and trowel mixture to top of strips.
3. Seeding of additional marble chips is optional.
4. Roll and compact surface until all excess cement and water has been extracted.
5. Trowel to a dense uniform flat surface disclosing lines of divider strips.

SPECIFIER'S NOTE: RETAIN "ABRASIVE STRIPS" SUBPARAGRAPH BELOW FOR ABRASIVE STRIPS. OPTION IS BASED ON NTMA RECOMMENDATIONS FOR PRECAST TERRAZZO STAIR TREADS.

6. Abrasive Strips: Install with surface of abrasive strip positioned at a nominal 1/16 inch higher than terrazzo surface.

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SPECIFIER'S NOTE: CURING MAY NOT BE NECESSARY UNDER VERY HUMID CONDITIONS.

D. Curing: Terrazzo Contractor shall cure the terrazzo topping as follows:

1. After completing placement of terrazzo and composition has sufficiently set, cover with water or polyethylene sheeting.
2. Cure until topping develops sufficient strength to prevent lifting or pulling of terrazzo chips during grinding.

SPECIFIER'S NOTE: DELETE THE FOLLOWING PARAGRAPH AND ASSOCIATED SUBPARAGRAPHS IF POURED IN PLACE TERRAZZO BASE IS NOT USED.

SPECIFIER'S NOTE: EXACT MATCH BETWEEN BASE AND FLOOR IS USUALLY NOT POSSIBLE.

E. Poured in Place Terrazzo Base: Terrazzo Contractor shall provide mix color for terrazzo base to match [**approved sample**] [**approved mockup**].

1. Terrazzo Contractor shall place and finish terrazzo base at the same time the terrazzo floor is being installed.

SPECIFIER'S NOTE: DELETE THE FOLLOWING PARAGRAPH AND ASSOCIATED SUBPARAGRAPH IF TERRAZZO STAIRS ARE NOT USED. POURED IN PLACE TERRAZZO IS RECOMMENDED FOR INSTALLATION OVER CONCRETE STAIRS OR STEEL PAN STAIRS.

F. Poured in Place Terrazzo Stairs: Terrazzo Contractor shall provide mix color for treads and risers to match [**main terrazzo field**] [**terrazzo border**] **[as indicated on Drawings]**.

1. Place and finish terrazzo stair treads and risers at the same time the terrazzo floor is being installed.

SPECIFIER'S NOTE: RETAIN THE FOLLOWING ONLY FOR POURED-IN-PLACED INSTALLATIONS OVER STEEL STAIRS.

2. Apply two sheet of steel wire lath to steel treads and risers. Offset each sheet so that wires are 2 inches o. c. Screw attach to steel substrates.

G. Finishing: Terrazzo Contractor shall finish the terrazzo topping as follows:

1. Rough Grinding: Grind with 24 or finer grit stones or with comparable diamond plates.
2. Grouting:

   a. Cleanse floor with clean water and rinse.
   b. Remove excess rinse water and machine or hand apply grout, taking care to fill voids.

SPECIFIER'S NOTE: CURING MAY NOT BE NECESSARY UNDER VERY HUMID CONDITIONS.

3. Cure Grout: Cure until grout is ready for fine grinding.

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SPECIFIER'S NOTE: GROUT MAY BE LEFT ON TERRAZZO UNTIL ALL HEAVY AND MESSY WORK ON PROJECT IS COMPLETED.

4. Fine Grinding/Polishing: Grind with 120 grit stones or comparable diamond abrasives until all grout is removed from surface.

SPECIFIER'S NOTE: COMPLETED INSTALLATION SHOULD MATCH APPROVED SAMPLES OR MOCKUPS.

SPECIFIER'S NOTE: GRINDING AND POLISHING WITH FINER GRIT ABRASIVES MAY BE PERFORMED AFTER TERRAZZO INSTALLATION HAS BEEN ACCEPTED. CONSULT WITH TERRAZZO INSTALLER FOR OPTIONS.

H. Terrazzo Cleaning: Terrazzo Contractor shall clean finished terrazzo as follows:

1. Remove grinding residue from terrazzo surface.
2. Wash terrazzo surfaces immediately after final grinding of terrazzo flooring with water and allow surfaces to dry thoroughly.

I. Sealing: Terrazzo Contractor shall seal terrazzo according to sealer manufacturer's written instructions.

SPECIFIER'S NOTE: DELETE THE FOLLOWING ARTICLE IF PRECAST TERRAZZO UNITS ARE NOT USED.

3.04 PRECAST TERRAZZO INSTALLATION

A. Terrazzo Contractor shall install precast terrazzo units as follows:

SPECIFIER'S NOTE: DELETE THE FOLLOWING SUBPARAGRAPH IF PRECAST TERRAZZO BASE IS NOT USED. ANSI 108.05 IS THE STANDARD SPECIFICATION FOR SETTING TILE WITH LATEX-PORTLAND CEMENT THINSET MORTAR; ANSI 108.06 IS THE STANDARD SPECIFICATION FOR SETTING TILE WITH EPOXY ADHESIVE.

1. Precast Terrazzo Base: Use [**latex-portland cement mortar**] [**or**] [**epoxy adhesive**] to install precast terrazzo base over substrates indicated according to [**ANSI 108.5**] [**or**] [**ANSI 108.6**].

SPECIFIER'S NOTE: KEEP FOLLOWING SUBPARAGRAPH IF PRECAST STAIR UNITS ARE SET ON CONCRETE STAIRS AND LANDINGS OR CONCRETE FILLED TREADS AND LANDINGS. ANSI 108.05 IS THE STANDARD SPECIFICATION FOR SETTING TILE WITH LATEX-PORTLAND CEMENT THINSET MORTAR; ANSI 108.06 IS THE STANDARD SPECIFICATION FOR SETTING TILE WITH EPOXY.

2. Precast Terrazzo Stair Units: Use [**latex-portland cement mortar**] [**or**] [**epoxy adhesive**] to install **[treads,] [risers,] [and] [landings]** over concrete substrates according to **[ANSI 108.5**] [**or**] [**ANSI 108.6]**.

SPECIFIER'S NOTE: KEEP FOLLOWING SUBPARAGRAPH IF PRECAST STAIR UNITS ARE SET ON STEEL RISERS OR STEEL PLATE STAIRS AND LANDINGS.

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3. Precast Terrazzo Stair Units: Use epoxy adhesive to install **[treads,] [risers,] [and] [landings]** over steel substrates according to ANSI 108.6.

3.05 REPAIR

A. Terrazzo Contractor shall repair terrazzo areas that evidence lack of bond between topping and underbed according to NTMA's written recommendations.

3.06 PROTECTION

A. After application of the sealer, the Work shall be ready for final inspection and acceptance by the Owner or his agent.

B. The General Contractor shall protect the finished floor after the Terrazzo Contractor has completed final grinding and applied sealer to terrazzo surfaces.

END OF SECTION

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