SECTION – terrazzo countertops

1. General
   1. SUMMARY
      1. This Section includes requirements for supply and installation of concrete terrazzo countertops on top of millwork.
   2. REFERENCE Standards
      1. American Society for Testing of Materials (ASTM):
         1. ASTM C503/C503M-15, Standard Specification for Marble Dimension Stone.
         2. ASTM C615C615M‑18e1, Standard Specification for Granite Dimension Stone.
         3. ASTM C616/C616M-15, Standard Specification for Quartz-Based Dimension Stone.
         4. ASTM C629/C629M-15, Standard Specification for Slate Dimension Stone.
      2. Canadian Standards Association (CSA):
         1. CAN/CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
         2. CSA A3000, Cementitious Materials Compendium.
      3. Terrazzo, Tile and Marble Association of Canada (TTMAC):
         1. TTMAC Portland Cement Terrazzo Digest Specification and Reference, latest edition.
         2. TTMAC Standard Terrazzo Colour Plates.
   3. Pre‑Construction Meeting
      1. Arrange a pre‑construction meeting in accordance with Section 01 31 19 – Project Meetings.
      2. The purpose of this meeting will be to discuss installation techniques, confirm compatibility of materials, identify any concerns arising from site conditions and identify any concerns of the installer or supplier.
   4. SUBMITTALS
      1. Provide product information in accordance with Section 01 33 00 – Submittal Procedures.
      2. Action Submittals: Provide the following samples before starting any work:
         1. Product Data: Indicate product description, fabrication information, and compliance with specified performance requirements.
         2. Shop Drawings: Provide shop drawings indicating terrazzo fabrication and installation requirements, plans, elevations, sections, component details, and attachments to other Work, and showing layout of the following:
            1. Precast terrazzo jointing and edge configurations.
            2. Terrazzo patterns.
         3. Samples for Initial Selection:
            1. Submit minimum of two (2) samples.

Label each terrazzo sample to identify matrix colour and aggregate types, sizes, and proportions.

* + - * 1. Prepare samples of same thickness and from same material used for the Work in size indicated below:

Terrazzo: 305mm x 305mm (12" x 12") samples.

Aggregate: Samples for colour and size review.

Accessories: 300 mm long samples of each exposed strip item required.

* + - * 1. The Owner may make minor adjustments to the ratio of the various aggregates in submitted samples to match colour scheme more closely and to adjust for variations between the colour plates and the actual samples:

The Owner acknowledges that terrazzo is fabricated from natural materials and that slight variations in colour and hue may occur between colour plates, samples, and actual installed materials.

The review process is intended to minimize the amount of expected variation, and to allow the Owner to adjust adjacent materials where variations are outside of the expected range for the specified colour palette.

* + - * 1. Countertops will be rejected at site under the following conditions:

Finish, texture colour and hue are outside of a reasonable range of variation based on the submitted samples.

Cracks visible from greater than 915mm (36”) from surface of countertop.

* + 1. Project Closeout Submissions:
       1. Operation and Maintenance Data: Submit manufacturer’s care and maintenance data, including repair and cleaning instructions in accordance with   
          Section 01 33 00 – Submittal Procedures.
  1. QUALITY ASSURANCE
     1. Qualifications: Provide proof of qualifications when requested by Consultant:
        1. Fabricator: Use a fabricator having a minimum of three (3) years experience in fabrication and installation of terrazzo countertops and have training and certification from the manufacturer for work of similar scope and complexity as that required for the project.
        2. Installer: Install using personnel experienced in installation decorative terrazzo countertops of similar design and complexity as that required for this Project.
        3. Materials and Workmanship shall be in accordance with the specifications and recommendations of Terrazzo, Tile and Marble Association of Canada (TTMAC) for terrazzo type indicated unless requirements that are more stringent are specified.
  2. DELIVERY, STORAGE AND HANDLING
     1. Delivery and Acceptance Requirements: Deliver components to project when areas are ready for installation.
        1. Transport countertops with care, securely anchored to pallet, to prevent damage to materials or finishes.
        2. Transport countertops to the site after completion of adjacent construction that could damage materials of this Section.
     2. Storage and Handling Requirements:
        1. Store countertops indoors in an area adjacent to installation.
        2. Block off floor.
        3. Tilt slightly and secure to prevent fall over.
        4. Protect and wrap to prevent abuse, or damage.
  3. SITE CONDITIONS
     1. Site Measurements: Verify dimensions by site measurements before fabrication and indicate measurements on shop drawings where terrazzo countertops are indicated to fit between or around other construction; coordinate fabrication schedule with construction progress to avoid delaying the Work.
     2. Established Dimensions: Establish dimensions and proceed with fabricating terrazzo countertops without site measurements where site measurements cannot be made without delaying the Work; coordinate construction to ensure that actual site dimensions correspond to established dimensions; allow for trimming and fitting.

1. Products
   1. COUNTERTOP MATERIALS
      1. Portland Cement Terrazzo:
         1. Portland Cement: meeting the requirements of CSA A3000, Type 10; colour as required by colour plate mix to match adjacent Portland cement terrazzo, as approved by the Consultant.
         2. Water: Potable.
         3. Sand: meeting the requirements of CSA A23.1.
         4. Matrix Pigments: Pure mineral or synthetic pigments, alkali resistant, colour stable, and compatible with matrix binder, and containing no deleterious or foreign matter.
      2. Aggregate:

SPEC NOTE: Select one of the following aggregate types for terrazzo mix.

* + - 1. Granite: In accordance with ASTM C615, selected for architectural finishing.
      2. Marble: Conforming to TTMAC Manual and Guide Specification Marble ‑ Exterior and Interior and ASTM C503 Classification, free from cracks, open seams, or other defects impairing structural integrity, selected for architectural finish.
      3. Travertine: In accordance with ASTM C568, medium to high density, selected for architectural finishing.
      4. Slate: In accordance with ASTM C629; Classification II Interior, selected for architectural finishing.
      5. Quartz: In accordance with ASTM C616; Classification III Quartzite, unless otherwise indicated in the manufacturer’s literature, selected for architectural finishing.

SPEC NOTE: Edit the following paragraphs / finish options to reflect the design intent indicated in the Product and Finish Schedule.

* + 1. Mix Colour and Pattern, and Manufacturer: As indicated in Section 09 06 05 – Product and Finish Schedule.
       1. Finish: [[High Gloss] [Satin] Polished] [Honed] [Flamed]
       2. Thickness: 30mm (1-1/4”)
       3. Edge Profile: D-Nose, unless otherwise indicated on the Drawings.
  1. COUNTERTOP SUPPORT MATERIALS
     1. Steel Support Framing: Refer to Section 05 70 00 – Decorative Metal, fabricate steel support framing to support weight of stone materials and to account for cut outs and openings required for installation.
     2. Wood Core: Fabricate countertop core from shop sanded exterior grade veneer core plywood, as indicated in Section 06 40 23 – Interior Architectural Woodwork.
     3. Shims: Fabricator’s standard shim materials to fully support stone slab on wood core to provide flat and level installation that does not transfer stresses that could cause cracking in stone slab.
     4. Fasteners: As recommended by manufacturer and as follows:
        1. Draw Bolt Fasteners: Mitre butt joint fastener, adjustable and requiring no special tools for installation, galvanized.
        2. Non-Exposed Fasteners: Fabricators choice consistent with quality level specified; exposed fasteners will not be permitted.
  2. ACCESSORIES
     1. Joint Adhesive: Manufacturers recommended adhesive designed to create chemically bonded, inconspicuous, nonporous joints.
     2. Sealant: Mildew resistant, silicone sealant, as specified in Section 07 92 00 – Joint Sealants.
        1. Colour: As selected by the Consultant from the manufacturer’s standard product line, unless otherwise indicated in Section 09 06 05 Product and Finish Schedule.
     3. Sealer: Clear penetrating sealer as recommended by manufacturer having zero Volatile Organic Compounds (VOC).
     4. Cleaner: Type recommended by manufacturer.
  3. FABRICATION
     1. Fabricate units to maximum size capable of being safely transported and handled to place of final installation in accordance with shop drawing and manufacturers written instructions using a fabricator certified by the manufacturer.
     2. Fabricate and machine shapes to profiles indicated on Drawings; obtain all dimensions affecting fabrication and installation from job site before starting fabrication.
     3. Cut, drill and shape fabrications as required to receive plumbing fittings and services, and built-in accessories, provide edge treatments, back splashes, and other details as indicated on Drawings.
     4. Finish edges and surfaces true, level and even with inconspicuous joints between having no voids formed using manufactures standard joint adhesive and reinforcing strips.
     5. Make cut outs with 3mm (1/8") radius corners to prevent stress cracking.
     6. Fabrication assemblies with tolerances as follows:
        1. Variation in component size: + 3mm (1/8").
        2. Location of openings: + 3mm (1/8") from indicated location.
     7. Match numbered components assembled on site; number items to show proper location on site; number on back using material that will not show or telegraph through finished assemblies.
     8. Provide anchorage to receive Work of other Sections scheduled and detailed to be installed.

1. Execution
   1. EXAMINATION
      1. Examine substrates, areas, and conditions where installations of countertops occur, with installer present, for compliance with manufacturers requirements. Verify that substrates and conditions are satisfactory for installation and comply with requirements specified.
         1. Carefully inspect the backup structure and millwork to verify that it is ready to accept the work of this Section.
         2. Verify all anchors, seats, connections attached to miscellaneous metal supports properly and securely fastened in correct locations.
         3. Verify access to point of installation for each stone unit.
   2. INSTALLATION
      1. Seal terrazzo materials before shipping to site.
      2. Support countertops evenly to prevent stress fractures.
      3. Apply a thin bead of adhesive to top edges of base cabinet and set countertops on top, square to face of cabinet work; cut out openings to match fixtures required and remove from countertops after final set of adhesives.
      4. Secure and tighten connections with equal torque to prevent stress fractures after countertop units are properly aligned, vertically and horizontally with each other and with other related building components.
      5. Seal joints between countertops and adjacent materials, and between abutting countertops with silicone sealant.

SPEC NOTE: Delete any / all of the following three (3) paragraphs regarding sink mounting. Select only the options that are required on the project.

* + 1. Adhere under mount sinks to countertops using manufacturer's recommended adhesive and mounting hardware.
    2. Install backsplashes and end splashes as indicated on Drawings; adhere to countertops using manufacturer's standard colour matched silicone sealant.
    3. Coordinate plumbing connections and electrical requirements with affected Sections of work.
  1. CLEANING AND PROTECTION
     1. Keep components and hands clean during installation; remove adhesives, sealants, and other stains as work progresses; keep components clean until Substantial Performance for the Project.
     2. Demonstration: Inform Owner of cleaning techniques and required cleansing materials.
     3. Repair or replace damaged work that cannot be repaired to match installed work at no additional cost to the Owner.
     4. Protect countertop surfaces and corners liable to damage with wood blocking, sacking, or other means, to prevent damage and chipping of installed countertops until Substantial Performance of the Project.

END OF SECTION