

Part 1 General

1.1 SCOPE OF WORKS

- .1 The list of works listed in this section is indicative and non-limitative. It does not exclude works described in other sections of the specifications, shown on drawings or necessary for a complete execution of the works in the spirit of the plans.
- .2 The present Scope of works concerns repairs and cleaning of existing terrazzo floors in basement of East wing.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C241-90(R2005), Standard Test Method for Abrasion Resistance of Stone Subject to Foot Traffic.
 - .2 ASTM D2370-98(R2002), Standard Test Method for Tensile Properties of Organic Coatings.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-25.20-95, Surface Sealer for Floors.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
 - .2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .3 CSA G30.5-M1983(R1998), Welded Steel Wire Fabric for Concrete Reinforcement.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .6 Terrazzo, Tile and Marble Association of Canada (TTMAC)
 - .1 Maintenance Guide.
 - .2 TTMAC/CSCTEK-AID 09 40 00, Portland cement Terrazzo Digest.
 - .3 TTMAC standard 3001.
 - .4 TTMAC/CSC Architectural Specification Study on Terrazzo (Portland cement).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof of manufacturer's ISO 9001 registration and compliance to Departmental Representative.
- .3 Submit proof of manufacturer's ISO 14001 registration and compliance to Departmental Representative.
- .4 Provide product data in accordance with Section 01 33 00 - Submittal Procedures, supplemented as follows:
 - .1 Submit product data and WHMIS MSDS sheets for floor sealer products.
- .5 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit two (2) 300 x 300 x 20 mm thick samples of the proposed color for repairs to existing terrazzo. Pigments, color and aggregates of samples must match those of existing terrazzo to repair.
 - .2 Make two samples of cleaning of existing terrazzo of 1 sq. meter with chemical detergent. The locations of mock-ups of works will be determined by Departmental Representative.
 - .3 Once cleaning mock-ups approved, make two mock-ups of application of sealant and of polishing of existing terrazzo of 1 sq. meter.
- .6 Closeout Submittals:
 - .1 Provide maintenance data as set out in TTMAC publication for terrazzo work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer: trained and experienced in tile work. Company must be registered as members in good standing with Terrazzo, Tile and Marble Association of Canada.
- .2 Supplier: a member in good standing with Terrazzo, Tile and Marble Association of Canada, providing materials meeting the minimum standards of TTMAC.
- .3 Mock-ups: construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .1 Provide mock-up for evaluation of surface finishes and workmanship.
 - .2 Construct two mock-ups of .15m² of proposed Portland cement terrazzo including the repair of 1 hole in the existing terrazzo.
 - .3 Construct mock-up where directed.
 - .4 Before proceeding with work, allow 3 working days for inspection of mock-ups by Departmental Representative.
 - .5 When accepted, mock-ups will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

.6 Sustainable Requirements:

- .1 Materials and products in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
- .1 Deliver materials to job site just prior to installation.
 - .2 Store materials inside, in dry location, protected from freezing, staining and damage, away from heavy traffic areas.
 - .3 Deliver and store materials in manner to prevent damage.
 - .4 Ensure materials remain in original wrapping and containers until used.
 - .5 Store cementitious materials on a dry surface.
- .2 Waste Management and Disposal:
- .1 Separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
- .2 Ventilation:
- .1 Provide continuously during and after installation. Run system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of installation.
 - .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
- .3 Temperature:
- .1 Maintain air temperature and structural base temperature at terrazzo installation area above 15 degrees C for 24 hours prior to, during, and for 48 hours following installation.

1.7 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

Part 2 Products

2.1 MATERIALS

- .1 Cement:
 - .1 Conforming to standard CAN/CSA-A3000.
 - .2 Type 10, grey for underbed.
 - .3 White for topping.
 - .4 6 % air-entrainment.

- .2 Sand, fine and coarse aggregates:
 - .1 Aggregates to match existing terrazzo.
 - .2 Conforming to standard CSA-A23.1/A23.2
 - .3 Clean, washed, locally available.
 - .4 Oval aggregate.
- .3 Water: potable.
- .4 Marble chips:
 - .1 Marble chips to match those of existing terrazzo.
 - .2 Graded in accordance with TTMAC standard.
 - .3 Abrasion resistance to ASTM C241.
 - .4 No deleterious or foreign matter.
- .5 Pigments:
 - .1 Pigments to match those of existing terrazzo
 - .2 Compatible with Portland cement.
 - .3 Alkali-resistant, colour-stable.
 - .4 Lime-proof mineral.
- .6 Epoxy bonding agent: two components, epoxy resin and epoxy hardener conforming to following performance properties after cure schedule of 28 days at 25 degrees C.
 - .1 Viscosity: mixed viscosity not less than 0.04 Pa.s or more than 0.5 Pa.s.
 - .2 Gel time: not less than half hour at 20 degrees C.
 - .3 Flexibility: Gardiner flexibility test, passes bending over 12 mm mandrel, without cracking.
 - .4 Elongation: ASTM D2370, minimum 10%.
 - .5 Bond strength: 2 MPa, with 100% concrete failure at minimum coverage, test concrete specimen minimum compressive strength 20 MPa.
 - .6 Coverage: 0.3 L/m² minimum, dry film thickness not less than 0.2 mm.
- .7 Welded steel wire fabric reinforcement: of 50 x 50 x 1.6 mm wire, galvanized, in flat sheets only.
- .8 Slip sheet: polyethylene sheet to CAN/CGSB-51.34, Type 2, and 0.05 mm thick.

- .9 Curing compound: to manufacturer's standard.
- .10 Cleaning compound: to TTMAC standard 1001, 1002, 1003, 1004.
- .11 Sealants:
 - .1 To CAN/CGSB-25.20.
 - .2 Sealants:
 - .1 Maximum VOC limit 50g/L to SCAQMD Rule 1168.
- .12 Finishing compound: to apply to all existing terrazzo and new terrazzo and conforming to TTMAC standard 3001.
 - .1 Sealant:

2.2 MIXES

- .1 Slurry coat: cement and water mixed to creamy paste.
- .2 Underbed: 1 part cement to 4 parts sand by volume.
- .3 Terrazzo topping: to match color of existing terrazzo and according to approved samples.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 WORKMANSHIP

- .1 Do terrazzo work in accordance with TTMAC/CSC Architectural Specification Study on Terrazzo (Portland cement) except where specified otherwise.

3.3 INSPECTION

- .1 Examine area to receive terrazzo for defects in existing work which may affect proper execution of terrazzo work.
- .2 Ensure tolerances of concrete slab work do not deviate from tolerance set for finished terrazzo floor.
- .3 Terrazzo contractor to start work only when all defects are corrected.

3.4 INSTALLATION

- .1 Install terrazzo after concrete slabs have cured 28 days.
- .2 Install divider strips true and level to detailed pattern.
- .3 Do existing terrazzo repairs at locations indicated on drawings.
- .4 Slope finished terrazzo floors to drains.
- .5 Produce terrazzo finished surfaces to match approved samples and existing terrazzo.

- .6 Terrazzo Repairs:
 - .1 Place terrazzo mixture in panels formed by divider strips. Trowel mixture to top level of strips.
 - .2 Cover sufficiently set terrazzo with polyethylene sheeting and cure until topping develops sufficient strength to prevent lifting or pulling of terrazzo chips during grinding.
 - .3 Rough grind: use finer than 24 grit stones for initial grind; use finer than 80 grit stones for second grinding.
 - .4 Grouting:
 - .1 Remove excess rinse water from terrazzo after cleaning and rinsing.
 - .2 Apply grout using identical Portland cement and colour pigments as in topping to fill voids.
 - .3 Cure grout:
 - .5 Fine grind: use finer than 80 grit stones to remove all grout from surface to show minimum of 70 % marble chips.
 - .6 Install 2 carborundum or similar grit abrasive inserts for safety lines.
 - .7 Use biodegradable, phosphate-free terrazzo cleaners, with ph between 7 and 10.
 - .8 Apply non-discolouring sealer with ph between 7 and 10.

3.5 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.6 CLEANING AND POLISHING OF TERRAZZO

- .1 Clean all rust stains, dirt and deposits on the existing historic terrazzo with a chemical detergent applied with low pressure atomizer (50psi max) conforming to recommendations of the TTMAC. Protect wall with plywood, brick walls adjacent to terrazzo floors to clean. Rinse the chemical cleaning with water under pressure of (400 to 1000psi). Recuparate all rinsing water and dispose of it, out of site in plastic barrel.
- .2 Once cleaning of terrazzo surfaces is completed, apply a protective sealer based on a type LS guard copolymer formula on the entire terrazzo floor of East wing in conformance to recommendations of TTMAC/I'ACTTM.
- .3 Once sealant is well dried, do a polishing of all the surfaces of t terrazzo in conformance to recommendations of TTMAC/I'ACTTM.

3.7 CLEANING AT END OF WORKS

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

END OF SECTION