

Part 1 - General

1.1 RELATED REQUIREMENTS

- .1 09 30 13 - Ceramic Tiling

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's Instructions, Recommendations and Technical Data:
 - .1 For each type of product indicated, include manufacturer's technical data, application instructions, and recommendations.
 - .2 Indicate special handling criteria, installation sequence, cleaning procedures.
- .3 Samples:
 - .1 Submit duplicate 300 mm x 300 mm samples, on rigid backing, of each colour, and texture of epoxy flooring.
 - .2 Approved colour and texture samples shall become the standard of quality for colour and finish for this project.
- .4 Provide maintenance data for epoxy flooring for incorporation into manual specified in Section 01 33 00 - Submittal Procedures.

1.3 QUALITY ASSURANCE

- .1 Installation shall be done only by certified applicators. Submit written verification from manufacturer indicating certification of applicator.
- .2 Mock-ups
 - .1 Apply full-thickness coating of each finish to 10 m² area of surface to be treated.
 - .2 Include minimum 1 m length of integral cove base.
 - .3 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with coating work.
 - .4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work upon Departmental Representative's approval.
- .3 Site Meetings: as part of Manufacturer's Services described in Article [3.5] - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
 - .1 After delivery and storage of products, and when preparatory Work is complete, but before installation begins.
 - .2 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning is carried out.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store material in original, undamaged, unopened containers, with manufacturer's labels and seals intact.
- .2 Store materials to comply with manufacturer's directions to prevent deterioration due to moisture, heat, cold, direct sunlight or any other causes.
- .3 Keep containers sealed when not in use.

1.5 SITE CONDITIONS

- .1 Safety:
 - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
 - .2 Ensure no open flame heating devices are used.

- .3 Discourage occupancy of treated space until volatile materials are no longer being emitted and there is no odour.
- .4 Provide adequate respiratory protection to exposed individuals.
- .2 Ventilation:
 - .1 Provide ventilation continuously during and after coating application. Run system 24 hours per day during application; provide continuous ventilation for 7 days after completion of application.
- .3 Environmental Limitations:
 - .1 Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
 - .2 Maintain material and substrate temperature between 18°C and 30°C during resinous flooring application and for not less than 24 hours after application.
- .4 Lighting:
 - .1 Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- .5 Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- .6 Concrete substrate shall be properly cured for a minimum of 30 days.

Part 2 - Products

2.1 MATERIALS

- .1 Epoxy Flooring System (EF)
 - .1 Stonshield HRI by Stonhard or approved equivalent.
 - .2 Interior epoxy flooring materials:
 - .1 System Characteristics:
 - .1 Wearing Surface: Medium texture minimum, heavy anti-slip in shower locations as indicated in the Drawings.
 - .2 Integral Cove Base where indicated on drawings.
 - .3 Overall System Thickness: nominal 6 mm.
 - .2 System Components:
 - .1 Primer:
 - .1 Resin: Epoxy.
 - .2 Formulation Description: two (2) components.
 - .3 Application Method: Squeegee and roller.
 - .4 Number of Coats: (1) one.
 - .5 Acceptable Materials: type as per manufacturer's recommendations for applicable substrate.
 - .2 Base:
 - .1 Resin: Epoxy.
 - .2 Formulation Description: three (3) components.
 - .3 Application Method: Metal Trowel.
 - .4 Thickness of Coats: nominal 6 mm.
 - .5 Number of Coats: one (1).
 - .6 Aggregates: finely graded silica.
 - .7 Basis-of-design Material: StonShield HRI by Stonhard.
 - .3 Undercoat:
 - .1 Resin: epoxy.
 - .2 Formulation description: three component, free flowing.
 - .3 Number of Coats: one (1).
 - .4 Aggregate:
 - .1 Coloured quartz for broadcast application.
 - .5 Sealer:
 - .1 Resin: Epoxy.

- .2 Formulation Description: two (2) component.
- .3 Type: clear.
- .4 Number of Coats: one (1).
- .6 Finish:
 - .1 Colours: To be Selected by Departmental Representative from Manufacturer's standard colour range.
- .3 System Physical Properties:
 - .1 Provide epoxy flooring system with the following minimum physical property requirements when tested according to test methods indicated:
 - .1 Compressive Strength (ASTM C579): 10,000 psi after 7 days.
 - .2 Tensile Strength (ASTM C3070): 2000 psi.
 - .3 Flexural Strength (ASTM C580): 4,300 psi.
 - .4 Water Absorption (ASTM C413): 0.1%.
 - .5 Impact Resistance (ASTM D2794): > 160 in. lbs.
 - .6 Flammability (ASTM E648): Class 1.
 - .7 Hardness (ASTM D2240): 85 to 90, Shore D.
 - .8 Slip resistance (ASTM F1679): 0.93 (wet).
- .2 Waterproofing membrane:
 - .1 Two-component, 100% solids, liquid applied, urethane waterproofing membrane; designed for use on horizontal applications as a positive-side moisture barrier; compatible with remainder of epoxy flooring system.
 - .2 Properties:
 - .1 Water vapour transmission (ASTM E96): < 1 g.
 - .2 Tensile strength (ASTM D412): 1200 psi.
 - .3 Elongation (ASTM D412): 200%.
 - .4 Hardness: ASTM D2240): 70, Shore A.
 - .5 VOC content (ASTM D2369): 8 g/L
 - .3 Standard of acceptance: Stonproof ME7 by Stonhard.
- .3 Trowelable epoxy grout:
 - .1 Three-component, heavy-duty, fast-setting, high temperature resistant grout; compatible with remainder of epoxy flooring system.
 - .2 Properties:
 - .1 Compressive strength (ASTM C579): 7400 psi after 7 days.
 - .2 Tensile strength (ASTM C307): 1800 psi.
 - .3 Flexural strength (ASTM C580): 2800 psi.
 - .4 Flexural modulus of elasticity (ASTM C580): 8.5×10^5 psi.
 - .5 Hardness: ASTM D2240): 86 - 88, Shore D.
 - .6 VOC content (ASTM D2369): 50 g/L
 - .3 Standard of acceptance: StonSet TG5 by Stonhard.
- .4 Accessory Materials:
 - .1 Patching and Fill Material: Resinous product as per resinous flooring manufacturer written recommendation to suit application.
 - .2 Primers: type as recommended by manufacturer for applicable substrate.
 - .3 Joint Sealant: Stonproof CT5 Crack Treatment.

2.2 MIXES

- .1 Mix coatings in accordance with manufacturer's instructions.
- .2 Mortar bed for floors: 1-part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail; when mixed with water mortar bed shall be of consistency and workability that will allow maximum compaction during tamping of mortar bed, and achieve minimum compressive strength of 15 MPa after 28 days. Stronger mix can be achieved by adding latex to water.

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 EXAMINATION

- .1 Examine conditions, substrates and work to receive work of this Section.
- .2 Examine substrate surfaces to receive epoxy coatings.
 - .1 Visually inspect substrate before starting Work of this Section.
 - .2 Examine site conditions and areas for defects of work prepared by other trades in which the work of this section is to be applied.
 - .3 Report to the Departmental Representative in writing, defects of work which may adversely affect the quality of workmanship of this section.
 - .4 Commencement of work shall imply acceptance of surfaces.
- .3 Verification of conditions:
 - .1 Verify that:
 - .1 Surfaces are clean, dimensionally stable, cured and free of contaminants such as oil, sealers and curing compounds.
 - .2 Ensure new concrete is cured for minimum 28 days with moisture content no greater than 14%.

3.3 PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's written instructions.
- .2 Substrate shall be sound, non-dusting, and free of grease, oil, dirt and other matter detrimental to adhesion and appearance of coating. Provide clean, dry, and neutral Ph. substrate for epoxy flooring application.
- .3 Where epoxy flooring is applied over existing floor surfaces, remove existing coatings / finishes and prepare substrates in accordance with manufacturer's written recommendations.
- .4 Mechanically prepare concrete substrates as follows:
 - .1 Repair damaged and deteriorated concrete according to epoxy flooring manufacturer's written recommendations.
 - .2 Clean concrete slab free from foreign matter. Remove laitance by shot blasting or other method approved by flooring manufacturer and acceptable to Departmental Representative.
- .5 Epoxy Materials: Mix components and prepare materials according to epoxy flooring manufacturer's written instructions.
- .6 Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- .7 Treat control joints and other non-moving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
- .8 Mask/cover adjacent surfaces, fixtures, equipment by suitable means to protect them from damage from the operations of this trade. Make good damage by this trade at own expense and to Departmental Representative's satisfaction.
- .9 Coordinate height of integral cove base with ceramic wall tile installation/ wall panelling. Top of cove base to be set a consistent height throughout entire building.

3.4 APPLICATION

- .1 General: Apply epoxy flooring system in accordance with manufacturer's written instructions, and where possible under direction of manufacturer's representative, to produce a uniform, monolithic wearing surface.
 - .1 Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum inter-coat adhesion.
 - .2 Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - .3 Texture:
 - .1 Standard Anti-slip:
 - .2 Moderate Anti-slip: anti-slip coating selection to be coordinated with Departmental Representative.
 - .4 Infill areas in existing where no mortar bed is present to maintain continuity of floor level as indicated in the Drawings.
- .2 Epoxy cove base:
 - .1 Integral Cove Base: affix metal cove strip cap at elevation noted. Apply cove base mix mortar to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Round internal and external corners.
 - .1 Size: minimum 127 mm high - maximum 152 mm high with 25 mm radius.
 - .2 Top of cove base shall be set to a consistent height throughout entire building regardless of floor level.
 - .2 Colour of base differs from general floor area in some locations. Coordinate extents and colour selections with Departmental Representative.
- .3 Terminations:
 - .1 Chase edges to 'lock' the flooring system into the concrete substrate along lines of termination.
 - .2 Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
 - .3 Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
 - .4 Treat floor drains by chasing the flooring system to lock in place at point of termination.
- .4 Joints and Cracks:
 - .1 Treat control joints to bridge potential cracks and to maintain monolithic protection.
 - .2 Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
 - .3 Discontinue floor coating system at vertical and horizontal contraction and expansion joints by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.
- .5 Curing:
 - .1 Cure epoxy flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 18 hours.
- .6 Moisture reduction barrier:
 - .1 Patch and prime substrate using manufacturer recommended products.
 - .2 Mix components, taking care to avoid entrapping air. Apply immediately after mixing using V-notched rake to obtain 3 mm applied thickness; back roll with spiked roller.

- .7 Waterproofing membrane:
 - .1 Patch and prime substrate using manufacturer recommended products.
 - .2 Mix components, taking care to avoid entrapping air. Apply immediately after mixing using 30 mil notched squeegee; back roll with spiked roller.

3.5 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in Article [1.2] - SUBMITTALS.
 - .2 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 Schedule site visits, to review Work, as directed in Article [1.3] - QUALITY ASSURANCE.

3.6 CLEANING AND PROTECTION

- .1 Clean uncured flooring materials from surfaces with solvent. Removal of cured materials requires scraping, chipping or grinding.
- .2 Protect flooring materials from wear and damage during construction operations. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application
- .3 Remove temporary covering and clean flooring just prior to final acceptance using materials and procedures recommended by flooring manufacturer.

3.7 SCHEDULE

- .1 Refer to Finish Schedule for extent of epoxy flooring.
- .2 Use waterproofing membrane with epoxy flooring systems on Second Floor.

END OF SECTION