

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes two resinous flooring systems, one with epoxy body and one with urethane-urea resin.

- 1. Application Method: Troweled screed, and sanded. Rubberized Terrazzo.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: For each resinous flooring system required, 5 inches (150 mm) square, applied to a rigid backing by Installer for this Project.
- C. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.
- D. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- E. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. urethane based rubberized terrazzo). Equivalent materials of other manufactures may be substituted only on approval of Architect or Engineer. Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.
- B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
 2. Contractor shall have completed at least 10 projects of similar size and complexity.
- C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- D. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
- E. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Apply full-thickness mockups on 48-inch- (1200-mm-) square floor area selected by Architect.
 - a. Include 48-inch (1200-mm) length of integral cove base.
 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Conference:
1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
 2. Attendance:
 - a. General Contractor
 - b. Architect/Owner's Representative.
 - c. Manufacturer/Installer's Representative.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
 - B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per Product Data sheet.

- C. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
 - 1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- D. Concrete substrate shall be properly cured. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring.

1.7 WARRANTY

- A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of one (1) one full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) one full year from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, the following:
- B. Products: Provide the following:
 - 1. Stonhard, Inc.; Stonres RTZ®.
 - 2. Sherwin-Williams Company, General Polymers. Ceramic Carpet #400.
 - 3. Sika Corporation; Sikafloor 265 Flexible Epoxy Membrane, Sikafloor Quartzite System, Sikafloor 510 topcoat.

4. Durex Coverings, Inc.; Mosaix Floor #190 with DX-470 Chemical Resistant Polyaspartic Top Coat.
5. Life Sciences Products Inc. SeamTek Type 4 Epoxy Quartz Flooring.
6. **Sherwin Williams Hybri-Flex EQ**

C. System Characteristics:

1. Color and Pattern: As indicated by Architect in finish legend drawings.
2. Wearing Surface: Smooth Rubberized.
3. Integral Cove Base: TBD
4. Overall System Thickness: 3/16 inch.

D. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Primer Coat:

- a. Material Basis: Stonhard Standard Primer.
- b. Resin: (2) two component epoxy.
- c. Formulation Description: 100 percent solids.
- d. Application Method: squeegee back roll.
- e. Number of Coats: One.

2. Primer Coat 2:

- a. Material Basis: Stonhard SL Primer.
- b. Resin: (3) three component epoxy.
- c. Formulation Description: 100 percent solids.
- d. Application Method: squeegee back roll onto wet standard primer.
- e. Number of Coats: One.

3. Formulation Description: Body Coat:

- a. Material Basis: Stonres Mortar base.
- b. Resin: Urethane
- c. Formulation Description: Comprised of a (3) three component mortar, consisting of pigmented urethane resin, curing agent, and rubber aggregates,
- d. Application Method: Screed Rake

1) Free-Flowing Mortar: Uniformly spread mortar over substrate using manufacturer's specially designed screed rake adjusted to manufacturer's recommended height. Spike roll the mortar to remove any rake lines, using manufacturer's specially designed spike roller.

2) Sanding: Sand surface of the cured mortar according to manufacturer's recommended equipment and procedures.

4. Grout coat:

- a. Material Basis: Stonres grout coat.
- b. Resin: Urethane

- c. Formulation Description: (2) two-component, 100% aliphatic, polyaspartic urethane.
 - d. Type: Clear
 - e. Finish: Matte.
 - f. Number of Coats: One.
5. Topcoat: Chemical resistant and high UV stability.
- a. Material Basis: Stonseal GS7 clear flat.
 - b. Resin: Aliphatic polyurethane.
 - c. Formulation Description: (2) two-component, waterborne, flat, aliphatic polyurethane topcoat.
 - d. Type: Clear
 - e. Finish: Matte.
 - f. Number of Coats: one.

Note: Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

- E. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
- 1. Static load Limit: 0.004in/0.1mm.
 - 2. Resistance to Heat: Delta E>8 per ASTM F-970.
 - 3. Hardness: 85 Min. per ASTM D-2240/Shore A Durometer.
 - 4. Residual Indentation: 1% thickness per ASTM F- 1914.
 - 5. Noise Reduction Coefficient: 0.05 per ASTM C-423.
 - 6. Abrasion Resistance: 0.01gm per ASTM D-3389, H-18 500g, 1000 cycles.
 - 7. Fire Resistance: Class 1, Per ASTM E-648.
 - 8. Percent Elongation: 150% per ASTM D-638.
 - 9. Thermal Coefficient of Linear Expansion: 3.3×10^{-5} in./in. . F per ASTM C-531

2.2 ACCESSORY MATERIALS

- A. Pitching and Leveling: Use a (3) three component fast setting trowel able epoxy grout. Resinous epoxy based grout designed for permanent repairs under flooring system. Stonhard, Stonset TG 5. See drawings for fill locations. Use standard drain details, saw cut and chase.
- B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 - 1. Mechanically prepare substrates as follows:
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup or Diamond Grind with dust free system.
 - 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
 - 3. Verify that concrete substrates are dry.
 - a. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 80 percent.
 - b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 6 lb of water/1000 sq. ft. of slab in 24 hours.
 - c. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- C. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- D. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances for Stonproof CT5.

3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.

3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
 - a. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Apply SL Primer over prepared substrate at manufacturer's recommended spreading rate wet on wet application.
- C. Integral Cove Base: High performance, mortar consisting of epoxy resin, curing agent and selected, graded aggregates blended with inorganic pigments, high solids epoxy mortar system. Top coat with Stonseal GS7, pigmented urethane top coat
- D. Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, and troweling, sanding, and top coating of cove base. Round internal and external corners.
- E. Free-Flowing Mortar: Mix mortar material according to manufacturer's recommended procedures. Uniformly spread mortar over substrate using manufacturer's specially designed screed rake adjusted to manufacturer's recommended height. Spike roll the mortar to remove any rake lines, using manufacturer's specially designed spike roller.
- F. Sanding: Sand surface of the cured mortar according to manufacturer's recommended equipment and procedures. Thoroughly clean and vacuum the surface of the base once all sanding has been completed.
- G. Grout coat: Mix and apply sealer with strict adherence to manufacturer's installation procedures and coverage rates.
- H. Topcoat: Mix and roller apply the topcoat with strict adherence to manufacturer's installation procedures and coverage rates.

3.3 TERMINATIONS

- A. Chase edges to "lock" the coating system into the concrete substrate along lines of termination.
- B. Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
- C. Trenches: Continue coating system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- D. Treat floor drains by chasing the coating to lock in place at point of termination.

3.4 JOINTS AND CRACKS

- A. Treat control joints and to maintain monolithic protection.

- B. 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.
- C. 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.

3.5 FIELD QUALITY CONTROL

- A. Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.
 - 1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
 - 3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 CLEANING, PROTECTING, AND CURING

- A. Cure resinous 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 24 hours.
- B. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.
- C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General contractor is responsible for cleaning prior to inspection.

END OF SECTION 096723