POLISHED URETHANE

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 one resinous flooring system, one with urethane chemistry

 1. Application Method: Broadcast and stain.

1.3 SUBMITTALS

 A. Product Data: Submit manufacturer’s technical data, installation instructions, and

general recommendations for each resinous flooring material required. Include Health Product Declaration (HPD’s) and certifications indicating compliance of materials with requirements.

B. Samples for Verification: For each resinous flooring system required, 4.25 inches (150

mm) square, applied to a rigid backing in color and finish and topcoat indicated.

C. Product Schedule: Use resinous flooring designations indicated in Part 2 and room

designations indicated on drawings in product schedule.

D. Maintenance & Cleaning 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 broadcast based system with stained concrete look). 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. Contractor shall have completed at least ten (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: Field Technical Services

Representatives shall be employed by the system manufacturer 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,

demonstrate aesthetic effects showing details including joints, and set quality standards for materials and execution.

1. Apply full-thickness mockups on 48-inch (1200 mm) square floor area selected by

Architect.

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.

G. ISO 9001-2008: All materials, including primers, resins, curing agents, finish coats,

aggregates and sealants are manufactured and tested under an ISO 9001 registered quality system.

1.5 DELIVERY, STORAGE, AND HANDLING

 A. Material shall be delivered to job site and checked by flooring contractor for

completeness and shipping damage prior to job start.

 B. Store components protected from exposure to harmful weather conditions and in a

temperature controlled area as recommended by manufacturer. Do not allow product to freeze.

C. Deliver products to areas to receive moisture treatment at least 48 hours prior to

application to allow them to acclimate to the space.

D. All materials used shall be factory pre-weighed and pre-packaged in single, easy to

manage batches to eliminate onsite mixing errors. No onsite weighing or volumetric measurements allowed.

1.6 ENVIRONMENTAL 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°F (18 and 30°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. Precautions shall be taken to avoid damage or contamination of any surfaces near the

work zone.

E. Concrete substrate shall be properly cured for a minimum of 30 days. 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.

F. Protection: Precautions shall be taken to avoid damage or contamination of any

surfaces near the work zone.

G. Do not install product of this Section until one (1) week after building is enclosed and

weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

 A. Manufacturer shall furnish a single, written warranty covering both material and

workmanship for a period of one (1) full year 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 one (1) 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:

1. Must comply with double broadcasting build. Liquid rich, slurry type systems will

not be accepted, and will result in a disqualification from bid.

B. Acceptable Manufactures:

 1. Liquid Elements (678-498-2945) (manufactured by The Stonhard Group) Basis of

design.

C. Products: Subject to compliance with requirements:

 1. Liquid Elements, Polished.

D. System Characteristics:

 1. Color and Pattern: Select from Liquid Elements standards.

 2. Wearing Surface: medium.

 3. Overall System Thickness: 2mm.

E. System Components: Manufacturer’s standard components that are compatible with

each other and as follows:

1. Primer Coat:

 a. Material Basis: Polished urethane primer.

 b. Resin: urethane.

 c. Formulation Description: two (2) components, 100 percent solids.

 d. Application Method: squeegee back roll.

 e. Number of Coats: one (1).

2. Broadcast:

 a. Material Basis: Texture #3 aggregate.

 b. Type: non-pigmented.

 c. Finish: standard.

 d. Number of Coats: one (1).

3. Undercoat:

 a. Material Basis: Polished urethane undercoat.

 b. Resin: aliphatic urethane.

 c. Formulation Description: two (2) components, 100 percent solids.

 d. Type: clear or pigmented.

 e. Number of Coats: one (1).

4. Broadcast: Stainable aggregate:

 a. Material Basis: Polished aggregate.

 b. Type: non-pigmented.

 c. Finish: standard.

 d. Number of Coats: one (1).

5. Stain:

 a. Material Basis: Polished stain.

 b. Resin: single (1) component waterborne stain.

 c. Formulation Description: waterborne.

 d. Application Method: spray apply.

 e. Number of Coats: multiple to desired color.

6. Sealer:

 Finish Gloss: Finish Matte:

 a. Material Basis: Polished sealer. a. Material Basis: Polished sealer.

 b. Resin: aliphatic, polyaspartic urethane. b. Resin: polyurethane.

 c. Formulation Description: two (2) c. Formulation Description: two (2)

 component, 100 percent solids, component, water based, flat

 UV stable. d. Type: clear.

 d. Type: clear. e. Number of Coats: two (2)

 e. Number of Coats: one (1)

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.

 F. System Physical Properties: Provide resinous flooring system with the following

minimum physical property requirements when tested according to test methods indicated:

1. Tensile Strength 4,800 psi per ASTM D 638.

2. Flexural Strength 2,000 psi per ASTM D 790.

3. Water Absorption < 1% per ASTM C 413.

4. Impact Resistance > 160 in. lbs. per ASTM D 2794.

5. Flammability Class 1 per ASTM E-648.

6. Hardness 60 to 65, Shore D per ASTM D 2240.

7. VOC Content Primer 89g/L

 Undercoat 94 g/L

 Sealer 100 g/L

2.2 ACCESSORY MATERIALS

 A. Patching and Fill Material: Resinous product of or approved by resinous flooring

manufacturer and recommended by manufacturer for application indicated.

B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for

type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.

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 re-circulates the shot by vacuum pickup. Obtain a CSP3 profile.

b. Comply with ASTM C 811 requirements, unless manufacturer’s written

instructions are more stringent.

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 85 percent.

b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with

application only after substrates have maximum moisture-vapor-emission rate of 2-3 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.

4. Verify that concrete substrates have neutral Ph and that resinous flooring will

adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.

C. Resinous Materials: Mix components and prepare materials according to resinous

flooring manufacturer’s written instructions.

D. Use patching and fill material to fill holes and depressions in substrates according to

manufacturer’s written instructions.

E. Treat control joints and other non-moving substrate cracks to prevent cracks from

reflecting through resinous flooring according to manufacturer’s written recommendations.

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 primer where required by resinous system, over prepared substrate at

manufacturer’s recommended spreading rate.

 C. Broadcast: Immediately broadcast Texture #3 aggregate into the primer using

manufacturer’s specially designed spray caster. Strict adherence to manufacturer’s installation procedures and coverage rates is imperative.

 D. Undercoat: Remove any surface irregularities by lightly abrading and vacuuming the

floor surface. Mix and apply undercoat with strict adherence to manufacturer’s installation procedures and coverage rates.

E. Broadcast: Immediately broadcast stainable aggregate into the undercoat using

manufacturer’s specially designed spray caster. Strict adherence to manufacturer’s installation procedures and coverage rates is imperative.

F. Spray apply single component translucent waterborne stain in number of coats per

desired color finish for flooring system and at spreading rates recommended in writing by manufacturer.

G. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates

recommended in writing by manufacturer.

3.3 TERMINATIONS/TRANSITIONS

 A. Chase edges to “lock” the flooring system into the concrete substrate along lines of

termination.

 B. Penetration Treatment: Lap and seal flooring system onto the perimeter of the

penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.

 C. Trenches: Continue flooring system into trenches to maintain monolithic protection.

Treat cold joints to assure bridging of potential cracks.

 D. Treat floor drains by chasing the flooring system to lock in place at point of termination.

3.4 JOINTS AND CRACKS

 A. Treat control joints to bridge potential cracks 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 number 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 non-complying 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 18 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.

END OF SECTION 096723