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Part 1 General

1.1 SECTION INCLUDES

A. Labor, products, equipment and services necessary for resinous flooring Work in accordance with the Contract Drawings covering the following components:

.1 Optional Primer: Sikafloor® 160.
.2 Base Coat: Sikafloor® 330.
.3 Wear Coat: Sikafloor® 330 with Broadcast Aggregate to Rejection.
.4 Top Coat: Sikafloor® 264.
.5 Alternative Top Coat: Sikafloor® 511.
.6 Alternative Top Coat: Sikafloor® 316 N.
.7 Alternative Top Coat: Sikafloor® 340.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 03 01 00 - Concrete Rehabilitation.

C. Section 03 39 00 - Concrete Curing.

1.3 REFERENCES

A. ASTM C579, Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

B. ASTM D2240, Standard Test Method for Rubber Property—Durometer Hardness.

C. ASTM D2369, Standard Test Method for Volatile Content of Coatings.

D. ASTM D4060, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

E. ASTM D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.

F. For additional standards please refer to Product Data Sheets

1.4 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including physical properties and colors available.

C. Manufacturer’s Safety Data Sheet for each product being used.

D. Product Samples: Submit Architectural Standard samples representative of the final finish, as applied. The Standard shall be approved in writing by the Architect and shall be the final standard of acceptance of the finish.

E. Maintenance Instructions: Submit manufacturer's maintenance instructions.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

.1 Acceptable Manufacturer: Sika Corporation, 201 Polito Drive, Lyndhurst, NJ 07071

.1 No request for substitution shall be considered that would change the generic type of system specified. Equivalent materials of other manufacturers may be substituted only on approval of the Architect or Engineer. Requests for substitution will be considered only if submitted 10 days prior to bid date. Requests shall include the respective manufacturer's technical literature for each product giving the name, generic type, descriptive information, recommended dry film thickness (DFT), Material Safety Data Sheet (MSDS), and certified test reports showing results to equal performance criteria of products specified herein.

B. Applicator Qualifications:

.1 Pre-Qualification: Each bidder for this project shall be pre-qualified and approved in writing by the material manufacturer.

.2 Applicator Experience: Each bidder must have a minimum 5 years experience in the application of the type of system specified. Contractor shall submit a list of five projects of similar size, scope and complexity.

C. Mock-Up:

.1 Construct one 100 sq.ft. (10 sq.m.) mock-up of each type and color of resinous flooring in location acceptable to Architect/Engineer to demonstrate quality of finished system, complying with manufacturer's instructions.

.2 Arrange for Architect/Engineer's review and acceptance, obtain written acceptance before proceeding with Work.

.3 Upon acceptance, mock-up shall serve as a minimum standard of quality for the balance of the work of this Section. Mock-up shall be left in place for the duration of the work.

D. Pre-application Meeting: Convene a pre-application meeting two (2) weeks before start of application of floor coating. Require attendance of parties directly affecting work of this section, including Contractor, Architect, applicator, and manufacturer's representative. Review surface preparation, priming, application, curing, protection, and coordination with other work.

1.6 DELIVERY, STORAGE AND HANDLING

A. Delivery:

.1 Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, batch or lot number, and date of manufacture.

.2 Material should be delivered to job site and checked for completeness and shipping damage prior to job start.

B. Storage:

.1 Store materials in accordance with manufacturer's written instructions.

.2 Keep containers sealed until ready for use. Material should be stored in a dry, enclosed, protected area from the elements.

.3 Do not subject material to excessive heat or freezing.

.4 Shelf life: Established based on manufacturer's written recommendation for each material being used.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

D. Condition materials for use accordingly to manufacturer's written instructions prior to application.

E. Record material lot number and quantity delivered to jobsite/storage.

1.7 SITE CONDITIONS

A. Do not install the Work of this Section outside of the following environmental ranges with Manufacturers' written acceptance:

SPECIFIER'S NOTE:

Note: Low Relative Ambient Humidity may result in slower cure.

Dew Point: Beware of condensation!

The substrate must be at least 5˚F (3˚C) above the Dew Point to reduce the risk of condensation, which may lead to adhesion failure or "blushing" on the floor finish. Be aware that the substrate temperature may be lower than the ambient temperature.

.1 Material Temperature: Precondition material for at least 24 hours between 65° to 75°F (18° to 24°C)

.2 Ambient Temperature: Minimum/Maximum 50˚/85˚F (10˚/30˚C)

.3 Substrate Temperature: Minimum/Maximum 50˚/85˚F (10˚/30˚C). Substrate temperature must be at least 5˚F (3˚C) above measured Dew Point.

.4 Mixing and Application attempted at Material, Ambient and/or Substrate Temperature conditions less than 65˚F (18˚C) will result in a decrease in product workability and slower cure rates.

.5 Relative Ambient Humidity: Minimum ambient humidity 30%, maximum ambient humidity 75% (during application and curing)

.6 Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.

B. Substrate moisture:

.1 Moisture content of concrete substrate must be ≤ 4% by mass as measured with a Tramex® CME/CMExpert type concrete moisture meter.

.2 Additionally, relative humidity tests may be conducted per ASTM F2170 and values must be ≤ 85%.

.3 If moisture content of concrete substrate is > 4% by mass as measured with Tramex® CME/CMExpert type and/or if relative humidity tests per ASTM F2170 exceed values > 85%, consider moisture mitigation systems or moisture tolerant primer.

C. Utilities, including electric, water, HVAC and permanent lighting to be supplied by General Contractor

D. Maintain constant ambient room temperature of plus or minus 15ºF (plus or minus 7ºC) with a minimum temperature of 50ºF (10ºC) and maximum temperature of 85ºF (30ºC). Maintain constant ambient room temperature for 48 hours before, during and after installation, or until cured. Do not apply while ambient and temperatures are rising.

E. Erect suitable barriers and post legible signs at points of entry to prevent traffic and trades from entering the work area during application and cure period of the floor.

F. Protection of finished floor from damage by subsequent trades shall be the responsibility of the General Contractor.

G. Insure adequate ventilation and air flow.

1.8 WARRANTY

A. Manufacturer's warranty covering the resinous flooring against defects in materials for one year from date of installation.

Part 2 Products

2.1 MANUFACTURER

A. Manufacturer shall be certified under ISO 9001: 2008 All liquid materials, including primers, resins, curing agents, finish coats, and sealants are manufactured and tested under an ISO 9001:2008 registered quality system.

B. Approved Manufacturer shall be Sika Corporation, Industrial Flooring, 201 Polito Avenue, Lyndhurst, NJ 07071, Phone 201.933.8800, Fax 201.933.6225, www.sikafloorusa.com

2.2 SYSTEM

SPECIFIER'S NOTE:

Sikafloor Merflex-PB broadcast is a monolithic, flexible, abrasion and slip resistant flooring system that is designed for areas requiring a combined water protection membrane and higher traffic wearing surface. The system is typically used in mechanical rooms, computer rooms and other areas requiring waterproofing. The incorporation of broadcast aggregate provides a non-slip finish for applications such as walkways or areas of spillage.

SPECIFIER'S NOTE: The system thickness is adjustable to 100 – 140 mils depending on condition of use.

A. Resinous flooring system: Sikafloor Merflex PB is a monolithic, flexible, abrasion and slip resistant flooring system that is designed for areas requiring a combined water protection membrane and higher traffic wearing surface applied between 100 to 140 mils thick. System to consist of the following components:

.1 Optional Primer: Sikafloor-160 applied between 8 - 12 mils.

.2 Base Coat: Sikafloor-330 applied at 20 - 25 mils.

.3 Wear Coat: Sikafloor-330 with Broadcast Aggregate to Rejection between 40 - 60 mils.

.4 Top Coat: Sikafloor 264 applied between 10 - 12 mils.

.5 Alternative top coat: Sikafloor-511 applied between 10 – 12 mils.

.6 Alternative top coat: Sikafloor-316 N applied between 4 – 6 mils.

.7 Alternative top coat: Sikafloor-340 applied between 4 – 6 mils.

2.3 MATERIALS

SPECIFIER'S NOTE: The following optional Primer is suggested if substrate condition requires primer and/or higher system build up is desired. Contact Sikafloor Technical Service or your local Sikafloor Representative for additional information.

A. Primer: Sikafloor-160 is a two component, high solids, epoxy for use as a primer, coating or as a binder for pigmented slurry/broadcast system or epoxy mortar. This general service epoxy demonstrates the following properties:

.1 Tensile Strength (ASTM C-307): 2,176 psi (14.7 MPa)
.2 Compressive Strength (ASTM C-579): 9,200 psi (63.4 Mpa)
.3 Tensile Adhesion Strength (ASTM D-4541): >350 psi (concrete failure)
.4 Shore D Hardness (ASTM D2240): 80
.5 Abrasion Resistance (ASTM D-4060): 110 mg
.6 Indentation (MIL-PRF-24613): 0.23%
.7 VOC Content (ASTM D2369): 13 g/L
.8 Chemical Resistance : Please Consult Sikafloor Technical Services
.9 Thermal Resistance: (ASTMC-884): Pass
.10 Water Absorption (ASTM C-413, 2 hours boiling): 0.55%

B. Base Coat and Wear Coat: Sikafloor-330 is a two component, high solids, flexible polyurethane resin system for use as a seamless self levelling wear course for Sikafloor systems. This unique, elastomeric polymer system maximizes flexibility and elongation to provide crack bridging capabilities with the following properties:

.1 Tensile Strength (ASTM D412): 1,142 psi (~8.0 N/mm^2)
.2 Elongation at Break (ASTM D412): 180% (14 Days)
.3 Tensile Adhesion Strength (ASTM D-4541): >400 psi (concrete failure)
.4 Shore A Hardness (ASTM D2240): >80 (14 Days)
.5 Tear Strength (ASTM D624): 142.75 lb./in.(~25 N/mm 14 days)
.6 VOC Content (ASTM D2369): 25 g/L
.7 Chemical Resistance : Sikafloor-330 must be sealed with Sikafloor-305 W or another suitable Sikafloor top coat. For chemical resistance of the system, please consult Sikafloor Technical Services.

C. Broadcast Aggregate: Sikafloor-508 aggregate.

SPECIFIER'S NOTE: The following alternative Top Coat options are suggested for this type of system. These are not the only Alternative top coats that can be used in this system. Sika offers a wide range of UV-resistant, chemical resistant and various gloss level options for additional Top Coats. Contact Sikaflooring Technical Service or your local Sikafloor Representative for additional options.

D. Top Coat: Sikafloor 264 is a pigmented two-part, low viscosity, self-priming, epoxy coating binder in [*Refer to Sikafloor color chart*] color with the following properties:

.1 Pull-off Strength (ASTM D4541): > 400 psi (2.7 MPa) with 100% concrete failure.

.2 Shore D Hardness (ASTM D2240): 76 at 7 days.

.3 Solid Content: ~ 100% (by volume) / ~ 100% (by weight).

.4 VOC Content (ASTM D2369): ≤ 50 g/L.

.5 Compressive Strength (ASTM C579): 7,250 psi (50 N/mm²) at 28 days.

.6 Flexural Strength (ASTM C580): 2,900 psi (20 N/mm²) at 28 days

SPECIFIER'S NOTE: DELETE IF NOT SELECTED/REQUIRED
Choosing Sikafloor-316 N as alternative top coat, may depend on the requirements of the area as well as owner preference. Please consult Sikafloor Technical Service or your local Sikafloor representative for additional information.

SPECIFIER'S NOTE: DELETE IF NOT SELECTED/REQUIRED
Sikafloor-316 N- is a high solids, low VOC abrasion resistant, aliphatic polyurethane coating. It displays excellent UV resistance and chemical resistance. Wear additive may be included for increased abrasion resistance. Sikafloor-316 N would be an alternative top coat on top of Sikafloor-330.

E. Alternative Top Coat: Sikafloor 316 N is a high solids, low VOC abrasion resistant, aliphatic polyurethane coating in [*Refer to Sikafloor color chart*] color with the following properties:

.1 Pull-off Strength to Primed Concrete (ASTM D4541): > 400 psi (2.76 MPa) with 100% concrete failure.

.2 Hardness (ASTM D 3363 Pencil): 2H to 3H concrete failure.

.3 VOC Content (ASTM D2369): With Wear Aggregate ≤ 100 g/L, With Sikafloor Urethane Color Add Only ≤ 50 g/L.

.4 Tensile Strength (ASTM D2370): 2,882 psi.

.5 Elongation: 2.29.

.6 Abrasion Resistance (ASTM D4060): 0.01 - 0.02 grams (CS-17 Wheel, 1000 gm load, 1000 cycles).

.7 Coefficient Of Friction (ASTM D2047): 0.6 - 0.7.

.8 Slip Resistance: Equivalent to ASTM D2047 Passes.

SPECIFIER'S NOTE: DELETE IF NOT SELECTED/REQUIRED
Sikafloor-511 - is a high solids, low viscosity, high strength polyaspartic resin system. It displays excellent UV resistance, chemical resistance and quick cure. Sikafloor-511 provides far superior UV resistance to discoloration. Sikafloor-511 would replace Sikafloor-264 as Top Coat.

F. Alternative Top Coat: Sikafloor-511 is a two-component, solvent-free, high solids, low-viscosity, high strength, polyaspartic resin system in *[clear] or [Refer to Sikafloor color chart color]* color with the following properties:

.1 Pull-off Strength (ASTM D1583): > 400 psi (2.7 MPa) with 100% concrete failure.

.2 Shore D Hardness (ASTM D2240): 75.

.3 VOC Content (ASTM D2369): ≤ 50 g/L.

.4 Viscosity (approximately) of Components A + B: 850 cps.

.5 Tensile Strength (ASTM C307): 6,500 psi.

.6 Coefficient of Friction (ASTM D1894): 61T 0.8.

SPECIFIER'S NOTE: DELETE IF NOT SELECTED/REQUIRED
Sikafloor-340 is a an aliphatic urethane with excellent chemical resistance and would replace Sikafloor-264 W as Top Coat.

G. Alternative Top Coat: Sikafloor -340 is an aliphatic urethane with excellent chemical resistance with the following properties:

1. Pull-off Strength (ASTM D1583): > 400 psi (2.7 MPa) with 100% concrete failure
2. Hardness (ASTM D3363): Pencil 2H to 3H.
3. VOC Content (ASTM D2369): 280 g/L.
4. Tensile Strength (ASTM D2370): 2,882 psi
5. Coefficient of Friction (ANSI 137.1) > 42

H.

I. Cove base: Epoxy mortar cove based.

Part 3 Execution

3.1 EXAMINATION

A. Examine surfaces to receive flooring system. Notify Architect/General Contractor/Owner/Owner's representative if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected. Do not apply to substrate treatments for moisture, repair, or leveling not of the same Manufacturer.

B. Surface must be clean, sound and dry. Remove dust, laitance, grease, curing compounds bond inhibiting impregnations, waxes and any other contaminants. All projections, rough spots, etc. should be dressed off to achieve a level surface prior to the application.

C. Concrete substrate to have a minimum compressive strength of 3,500 psi (24 MPa) at 28 days and a minimum of 215 psi (1.5 MPa) in tension at time of application.

D. Substrate moisture:

.1 Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.

.2 Confirm and record above values at least once every 3 hours during installation, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.).

E. Ensure concrete substrate conforms to the minimum requirements of the flooring manufacturer.

F. Flooring system shall not be applied to sand-cement setting beds. Sand-cement beds shall be removed to structural concrete substrate and re-leveled/sloped as necessary to achieve grade and/or adequate drainage.

G. Flooring system shall not be applied to asphaltic or bitumen membranes, soft wood, aluminum, copper or fiberglass reinforced polyester/vinyl ester composites.

H. Application to glazed or vitrified brick and tile, structural wood, steel shall only be permitted with Manufacturer's written recommendation.

3.2 SURFACE PREPARATION

A. Prepare surface to receive flooring systems in accordance with manufacturer's written instructions.

B. Remove dirt, oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners, and other surface contaminants. Remove sealers, finishes, and paints. Remove unsound concrete by appropriate mechanical means.

C. Concrete: Shall be cleaned and prepared to achieve laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means (CSP level as per ICRI guidelines and manufacturer's written recommendation).

D. Chemical Surface Preparation: Chemical surface preparation (acid etching) is unacceptable and will void Manufacturer's warranty.

E. Control joints and cracks: Provide repair and treatment of control joints and surface cracks utilizing manufacturer's standard materials and installation details.

3.3 APPLICATION

A. Mix and apply material with strict adherence to manufacturer's written installation procedures and coverage rates.

B. Follow Manufacturer's written recommendations on terminations and connections to walls, drains, doorways, columns and floor-to-floor transitions.

C. Do not apply while ambient and substrate temperatures are rising.

D. Apply resinous flooring with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform color, sheen and texture, all within limitations of materials and areas concerned.

E. Match colors and textures of approved samples.

F. Install cove base *[...]* high with *[...]* radius in accordance with manufacturer's written instructions.

3.4 CLEAN UP

A. Disposal of this product, solution and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

B. Empty containers should be taken to an approved waste handling site for recycling or disposal.

3.5 PROTECTION

SPECIFIER'S NOTE: Under certain conditions, cure times, recoat times and return to service time may be shortened due to environmental conditions. Consult Manufacturer's Product Data Sheets, and review job site conditions to determine if shorter times can be achieved.

A. Freshly applied material should be protected from dampness, condensation and water for at least 72 hrs.

B. Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc. may result in surface imperfections and other defects.

C. Follow manufacturer's written recommendation with respect to cure, wait time and return to service.

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END OF SECTION