SECTION 09 67 00 - FLUID-APPLIED FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes a fluid-applied flooring overlay system over a cementitious topping [and magnesium oxide underlayment board].

B. Related Requirements:
1. Contracting Requirements of Div. 00 Documents apply to, and are a part of, this Section.
2. General Requirements of Div. 01 Specification Sections apply to, and are a part of, this Section.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meetings: Conduct at [Project site] minimum [one week] [before commencing work of this Section.] [before purchasing materials for mock-up.]

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For [each type] [and] [color] of surfaces and components for [initial selection and] [again for] [verification].
1. Sample Size: 5 x 5 inches.

1.04 INFORMATIONAL SUBMITTALS

A. Product certificates.
1. Material certificates.

B. Sample warranties.

C. Maintenance data.

D. Executed warranties.

1.05 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer Qualifications: Minimum [5] years experience [under current organizational structure] [regularly engaged] in the manufacturer and supply of products specified in this Section.
2. Applicator Qualifications: An employer of workers and supervisors trained and certified by manufacturer for installation of Products specified in this Section.
a. Staff: [Employ a competent foreman to supervise Work of this Section.] [Foreman shall be present whenever Work is in progress.]

Field Samples are full-size installations or physical assemblies constructed on-site, or at designated off-site location, in advance of final work as a benchmark to allow the Architect an opportunity to view and approve qualities of materials and execution and establish the standard by which the Work will be judged.

Retain characteristics below as required to suit products involved.

B. Field Samples: Per Div. 01 Section "[FIELD SAMPLES] [QUALITY REQUIREMENTS] ["] [" and as follows:]
1. Install samples for each type [, color,] [and] [pattern] of coating specified[, including accessories].
2. Size: Provide samples of at least [100] sq. ft.

Retain below for multiple substrates if requiring sample application to each type of substrate.

3. [Apply coating sample to each substrate required.]
4. Approved samples may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products from moisture in accordance with manufacturer's instructions.

B. Deliver materials in manufacturer's unopened containers, identified with brand, type, grade, class and other qualifying information.

C. Store off the ground and covered and within temperature limits recommended by manufacturer.

D. Ensure products and containers are maintained clean, dry, and free of damage.

1.07 FIELD CONDITIONS

A. Ambient Conditions:
1. Minimum Conditions: Do not install products if substrate temperature is below 40 degrees F or above 100 degrees F, or if ambient temperature is below 40 degrees F above 100 degrees F.
2. Do not apply if precipitation is expected within a 24hour period.
3. Maintain ambient temperatures within range recommended by manufacturer, but not less than 40 deg F or more than 100 deg F, in spaces to receive work of this Section during the following time periods:
a. 48 hours before installation.
b. During installation.
c. 48 hours after installation.

1.08 WARRANTY

A. Standard Warranty: Furnish manufacturer's standard 5 year warranty providing coverage against failures in materials or workmanship. Failures include, but are not limited to, the following:
1. Delamination from substrate.
2. Failure of system to meet performance requirements.
3. Deterioration of finish beyond normal use or weathering.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Manufacturer: FLOWSTONE, http://www.flowstonefloor.com/

B. System Source Limitations: Obtain primary flooring materials from a single source from a single manufacturer.

1. Obtain secondary and incidental components from same manufacturer as primary flooring materials or manufacturer approved by primary flooring materials manufacturer.

2.02 PERFORMANCE CRITERIA

A. Surface-Burning Characteristics: ASTM E84; Class A.

B. Dynamic Coefficient of Friction (DCOF): For products installed on level, interior walkway surfaces expected to be walked upon when wet, provide products with DCOF of not less than 0.42 as determined by testing identical products per method specified in paragraph 9.6 of ANSI A137.1.

C. Co-efficient of Friction: ADA compliant when tested to MIL-D24613.

D. Chemical Resistance: When tested to ASTM D2229.
1. Industrial Detergent Solution: No Effect.
2. Ammonia Solution: No Effect.
3. Salt Solution: No Effect.
4. Muriatic Acid: No Effect.
5. Chlorine Solution: No Effect.
6. Ethylene Glycol: No Effect.
7. Kerosene: No Effect.
8. Turpentine: No Effect.
9. Paint Thinner: No Effect.

2.03 SYSTEMS / ASSEMBLIES

A. [Concrete] [Gypsum] Substrate System:

Retain below for concrete with asbestos content requiring encapsulation.

1. Fluid-Applied Encapsulation Membrane & Decorative Flooring System:
a. Primer: Elastomeric asbestos encapsulation membrane.
b. Base Coat: Cement Overlay.
c. Texture Coat: Cement Overlay.
d. Color Coat: [Color] [To be selected from manufacturer's full color range.]
e. Top Coat: Clear sealer.
f. Overall System Thickness: Nominal thickness 1/8-inch.
g. Finish: [Semi-gloss] [High gloss].

2. Fluid-Applied Decorative Flooring System:
a. Base Coat: Cement Overlay.
b. Texture Coat: Cement Overlay.
c. Color Coat: [Color] [To be selected from manufacturer's full color range.]
d. Top Coat: Clear sealer.
e. Overall System Thickness: Nominal thickness 1/16-inch.
f. Finish: [Semi-gloss] [High gloss].

B. Wood Substrate System:
1. Fluid-Applied Decorative Flooring:
a. Base Coat: Cement Overlay.
b. Texture Coat: Cement Overlay.
c. Color Coat: [Color] [To be selected from manufacturer's full color range.]
d. Top Coat: Clear sealer.
e. Finish: [Semi-gloss] [High gloss].

f. Overall Decorative Floor System Thickness: Minimum thickness of 1/8.
g. Underlayment Board: 3/4-inch thickness.

2.04 COMPONENTS AND MATERIALS

Retain below primer for concrete with asbestos content requiring encapsulation.

A. Primer: Elastomeric asbestos encapsulation membrane, latex acrylic water-based coating which forms an elastomeric waterproof membrane.
1. Basis of Design Product: Covercoat by Flowstone.
2. Properties:
a. Tensile Bond Adhesion: 162psi (cohesive) when tested to ASTM C297.
b. Tensile Strength, psi: 99 when tested to ASTM D412.
c. Elongation: 1,086psi when tested to ASTM D2370.
d. Low Temperature Flexibility: ½" Room Temp Pass when tested to ASTM D522.
1) (Mandrel Bend) 1" @ -5F Pass ½" @ -5F Pass
e. Static Hydrostatic Pressure Test: Pass, >45psi when tested to ASTM C1306.
f. Hydrostatic Head: 12" Water/Film @ 40mil Pass 96 hour/no effect.

B. Cement Overlay: Proprietary modified cementitious material designed to protect, re-store, & beautify.
1. Basis of Design Product: Crust Coat by Flowstone.
2. Properties:
a. Concentrated Load: Pass – No penetration when tested to when tested to AC-39 (Section 4.11)
b. Weatherometer: No cracking or crazing when tested to ASTM G23.
c. Freeze-Thaw: Pass - 0.02% loss when tested to ASTM C67.
d. Low-Temperature Flexibility: Pass - No crazing or cracking when tested to AC-39 (Section 4.11)
e. Flexural Strength: 770 psi (Modulus of Rupture) when tested to ASTM-D790.
f. Tensile Strength: 457 psi (ASTM-C190)
g. Tensile & Elongation: 1,700psi when tested to ASTM 638.
h. Abrasion Test: 39 mil loss 1000cyc-1000gms (ASTM-1242A)
i. Bond Strength:
1) Magnesium Board: 750psi when tested to ASTM C297.
2) Concrete: 2,200 psi, when tested to ASTM C297.
3) Fiberglass Mesh: 1,800 psi, when tested to ASTM C297.

C. Color Coat: Semi-translucent colored proprietary modified primer used to create an aesthetic natural color shading/marbling effect prior to sealing.
1. Basis of Design Product: Color Coat by Flowstone.

D. Clear Sealer: Clear, gloss, two-component aliphatic polyaspartic ester sealer.
1. Basis of Design Product: Clear Coat by Flowstone.
2. Properties:
a. VOC Content: 0 gm/g/Liter
b. Freeze-Thaw: Pass - 0.02% loss when tested to ASTM C67.
c. Weatherometer: No cracking or crazing when tested to ASTM G23.
d. VOC Content: 0 gm/g/Liter
e. Tensile Strength: 6,500 psi when tested to ASTM D2370.
f. Elongation: 26 percent when tested to ASTM D2370.
g. Hardness (Pencil / Sword): 2H / 70, when tested to ASTM D3363.
h. Water Absorption: Pass – Less than 0.03 percent when tested to ASTM D570.
i. Abrasion Resistance: Less than 15 ml loss when tested to ASTM D1242.
j. Percolation: Pass – no visible water droplets when tested to AC-39 (Section 4.7)

k. Impact Resistance (Direct / Reverse): 140 lbs / 140 lbs per ASTM D2794.
l. QUV Weatherometer (Alclad aluminum): 1,000 hours per ASTM G53
1) Oxidation: no effect
2) Loss of Gloss: Slight
3) Blistering: No Effect
4) Yellowing: No Effect

E. Reinforcing Fabric: Stitch-bonded heat-set polyester high-performance reinforcement fabric.
1. Basis of Design Product: Stitch Bond Polyester Fabric by Multicoat Corp.
2. Properties:
a. Tensile Strength: 57-74 lbs per ASTM D-1682
b. Trapezoidal Tear Strength: 16 lbs per ASTM D-1117)
c. Elongation: 61-63 percent per ASTM D-1682)
d. Mullen Burst (Ball) 176 lbs per ASTM D-3786)
e. Weight of Fabric: 3 oz. / sq yard
f. Thread Count/Gauge: 12 threads per inch (14 gauge)
g. Color: White to off-white with printed alignment stripe.
h. Maximum VOC Content: 0 gm/liter

Wood Substrates: Retain optional underlayment product and its below accessories.

F. Underlayment Board: Fire-resistant, mold-resistant, vapor-permeable, dimensionally stable magnesium oxide board.
1. Basis of Design Product: Exacor Underlayment by Huber Engineered Woods, LLC., Subfloor by US Mgo.
2. Properties:
a. Thickness: Minimum 1/2-inch.
b. Panel Size: 48 by 96 inches.
c. Edge profile: Straight (square)
3. Underlayment Fasteners: Size and type complying with the manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
a. Nails: Deformed shank nails with a shank diameter of 0.113 inches by 1.5 inches long, minimum
1) Corrosion Resistant: Class D, ASTM A153 Hot-Dipped Galvanized or better
4. Underlayment Panel Adhesive: Polyurethane- or solvent-based product complying with ASTM D3498 or APA AFG-01.
5. Joint Reinforcement for Seams: Self-adhesive 10-by-10 glass mesh, 2-inch wide, 2.2 oz. Fiberglass mesh tape as recommended by the manufacturer.
6. Primer: HydroBed or manufacturer-approved.

G. Water: Potable.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

Retain option below if requiring the installer to be present and/or a report to be issued.

A. Verification of Conditions:
1. Examine substrates, areas, and conditions[, with installer present,] for compliance with requirements for installation and conditions affecting performance of the Work.
2. [Ensure new concrete has cured for a minimum 28 days.]
3. Ensure concrete is free of curing compounds, release agents, water repellent materials, and contaminants that may prevent proper bonding.

4. Prepare a written report, endorsed by the installer, listing conditions detrimental to performance.
5. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Surface Preparation: Comply with the manufacturer's written instructions.

3.02 MAGNESIUM OXIDE BOARD UNDERLAYMENT INSTALLATION

Retain this optional Article if desired to create a smooth substrate to receive the coating system.

A. Underlayment Installation, General:
1. Install underlayment boards in accordance with manufacturer's written instructions, requirements of applicable [evaluation reports;] [fire-resistant assembly;] and requirements of authorities having jurisdiction.
2. Fully support underlayment panels on [existing floor substrate] [wood structural panel subflooring].
3. Maintain designed expansion joints through underlayment. Do not bridge designed expansion joints in the structural panel subfloor.

B. Underlayment Installation:
1. Glue and nail to wood structural subflooring.
2. Apply adhesive in accordance with the manufacturer's instructions.
a. Place the underlayment with the rough side exposed. Butt underlayment tight to adjacent panels.
b. Offset underlayment edges a minimum of 4 inches from structural subflooring edges.
c. Ensure full contact between the underlayment and structural subflooring.
3. Mechanically fasten the underlayment board.
a. Space Fasteners: 6 inches on center at all edges and 12 inches on center in the field.
b. Locate fasteners 1/2 inches from board edges and 2 inches from panel corners.
c. Fasten underlayment to the subfloor.
d. Ensure fasteners sit flush or slightly below the panel surface,

3.03 APPLICATION

A. Comply with the manufacturer's written installation instructions, recommendations, and approved submittals.

B. Primer: Apply by roller, brush, or spray at a coverage rate of 40-50 sq. ft. per gallon in two coats. Allow to dry thoroughly between coats.
1. Install reinforcing fabric at potential leak areas, such as parapets, drains, coves, flashing, posts, and protrusions.
2. Embed reinforcing fabric immediately during the application of the first coat.
3. Apply an additional elastomeric membrane on top of the fabric to ensure encapsulation of the fabric.
4. Broadcast silica sand to the refuse, remove excess.

C. Cement Overlay: Apply by roller, trowel, or squeegee in [one coat plus texture coat] [or] [two or more coats plus texture coat], depending on surface condition.
1. Thickness: As recommended by the manufacturer.
2. [Textured Finish: Apply using a hopper gun and knock down with a trowel while the material is curing. Match approved sample.]
3. Allow to cure for [24] [48] hours before applying sealer.

D. Color Coat: Apply in accordance with the manufacturer’s instructions.

E. Top Coat: Apply by roller or squeegee in one coat to a nominal thickness of 8 to 10 mils.

3.04 REPAIR

A. Repairing Damaged Finishes: Immediately after installation, repair areas where coatings or finishes are marred, abraded, deteriorated, or otherwise damaged.
1. Replace flooring that cannot be repaired to the Architect's and Owner's] satisfaction.

3.05 CLEANING

A. Clean according to the product manufacturer's written instructions in a manner that leaves an undamaged and uniform finish matching the approved sample.

END OF SECTION 12 34 56