

SECTION 09 6724

HYBRID XT RESINOUS FLOORING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Hybrid XT resin based concrete floor finish.

1.02 RELATED REQUIREMENTS

- A. Section 01 3515 - LEED Certification Procedures: Coordinate with project LEED requirements.
- B. Section 02 4119 – Selective Demolition: Selective demolition required for this work.

1.03 REFERENCE STANDARDS

- A. American Concrete Institute (www.concrete.org)
 - 1. ACI 308R – Guide to Curing Concrete; 2008

- B. ASTM International (American Society for Testing and Materials; www.astm.org)
 - 1. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing; 2012
 - 2. ASTM C579 – Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes; 2012
 - 3. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2012
 - 4. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers Tension; 2006
 - 5. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2012
 - 6. ASTM D4258 – Standard Practice for Surface Cleaning Concrete for Coating; 2012
 - 7. ASTM D4259 - Standard Practice for Abrading Concrete; 2012
 - 8. ASTM D4263 – Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method; 2012
 - 9. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2009
 - 10. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2011
 - 11. ASTM F1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011
 - 12. ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2011

- C. LEED – Leadership in Energy and Environmental Design

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct meeting at project site.

1. Attendees:
 - a. Owner
 - b. Architect
 - c. Resinous flooring manufacturer's representative, or V-8 certified installer.
2. Review and finalize construction schedule.
3. Verify availability of materials, installer's personnel, equipment, and facilities needed to maintain schedule.
4. Review means and methods related to installation, including manufacturer's written instructions.

1.05 SUBMITTALS

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Submit installation layouts of resinous flooring; including details of edge conditions, joints, and accessories.
- C. Product Data: Submit for each type of product indicated. Include technical data, application instructions and recommendations for each resinous flooring component required.
- D. Samples for Initial Selection: Submit for each type of exposed finish required.
- E. Samples for Verification: For each type of resinous flooring system required, provide **[6 inch square]** sample, applied to rigid backing by actual project Installer.
- F. Installer Certificates: Signed by manufacturer certifying that installer complies with specified requirements and has been approved by manufacturer.
- G. Field Quality Control Reports: Submit test results for concrete substrate moisture-vapor emissions, moisture content, alkalinity, and relative humidity.
- H. Maintenance Data: Submit to include in maintenance manuals for resinous flooring.
- I. Sustainable Design Submittals **[LEED Reports]**:
 1. Submit documentation of volatile organic compounds (VOC) content.
 2. Dust Control Plan: Written description of materials and procedures used to control and remove dust from working area, prevent contamination of heating, ventilating, and air conditioning (HVAC) systems, **[and to prevent contamination of adjacent occupied spaces]**.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative, or V-8 certified installer, that is trained and approved by manufacturer for performing work of this section.
 1. Install system in strict compliance with manufacturer's installation instructions.
 2. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
- B. Source Limitations: Obtain primary Hybrid XT resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source and single manufacturer.
 1. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

1.07 MOCKUPS

- A. Mockups: Provide field mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and to establish quality standards for installation.
 - 1. Apply full-thickness mockups on [4 foot] or [<Insert Number>] square floor area as selected by Architect.
 - a. Include 48 inch length of integral wall base with inside [and outside] corner.
 - 2. Simulate finished lighting conditions for Architect's review of mockups.
 - 3. Subject to compliance with requirements, approved mockup [may] or [may not] become part of completed Work when undisturbed upon date of Substantial Completion.

1.08 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 within dry interior areas, and maintain temperatures between 60 and 95 degrees F.
 - 1. Protect separated A and B components of Hybrid XT resinous flooring from contact with moisture, such as dew, high humidity, and liquid water until fully cured.
 - 2. Exposure to extreme temperatures or moisture may result in blistering, bubbles, or loss of glossy surface resulting in failed installation.

1.09 PROJECT CONDITIONS

- A. Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
 - 1. Application Range:
 - a. Ideal: Maintain material, substrate surface, and ambient temperature range of 40 to 90 degrees F and humidity between 25 and 50 percent.
 - b. Maximum: Maintain maximum material, substrate surface, and ambient temperature of 100 degrees F, and humidity of 0 percent.
 - c. Minimum: Maintain minimum material, substrate surface, and ambient temperature of 0 degrees F and humidity of 85 percent.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during Hybrid XT 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.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Xtreme Engineered Floor Systems; Product V-8 Hybrid XT Decorative Floor Coating.
 - 1. Address: 3303 Hudson Trails Drive, Hudsonville, MI 49426.
 - 2. Phone: (800) 234-8208; Fax: (616) 896-8332; Website: www.V8FloorCoatings.com.

2.02 PERFORMANCE CRITERIA

- A. Hybrid XT Resinous Flooring: Two parts, 100 percent solids Hybrid XT flooring system that is self-leveling, ultra-violet (UV) resistant, and chemical resistant.
 - 1. Dry Film Thickness (DFT): 10 to 60 mils.
 - 2. Volatile Organic Compounds (VOC's): Zero.
 - 3. Tensile Strength: 2920 psi; ASTM D412.

4. Tear Strength: 375 lbs per linear inch; ASTM D624.
5. Viscosity: On Hybrid XT - Part B; 750 centipoise (CPS) at 75 degrees F.
6. Coefficient of Friction: 0.60.

2.03 MATERIALS

- A. Two-Part Hybrid XT Resin: Part A - clear odorless liquid, with chemical name of aliphatic polyisocyanate; Part B - light yellow colored liquid, mild odor, with chemical name of polyaspartic.
- B. Flooring System:
 1. Full Chip Vinyl Broadcast System: Provide color for floor system based on the following.
 - a. Primer Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**]
 - b. Base Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - c. Vinyl Flakes: [V100] [V200] [V300] [V400] [V500] [V600] or [As selected by Architect from **manufacturer's full line of colors**].
 - 1) Size: [1/4 inch] or [1/16 inch].
 - d. Grout Coat: Clear, non-pigmented coating over broadcast color chips.
 - e. Finish Coat: Clear, non-pigmented top coating.
 2. Full Chip Mica Broadcast System: Provide color for floor system based on the following.
 - a. Primer Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - b. Base Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - c. Mica Flakes: [5001] [5002] [5003] [5004] [5005] [M1000] or [As selected by Architect from **manufacturer's full line of colors**].
 - 1) Size: [Macro, 1/4 inch] or [Micro, 1/16 inch].
 - d. Grout Coat: Clear, non-pigmented coating over broadcast color chips.
 - e. Finish Coat: Clear, non-pigmented top coating.
 3. Vinyl Chip Random System: Provide color for floor system based on the following.
 - a. Primer Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - b. Base Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - c. Vinyl Flakes: [V100] [V200] [V300] [V400] [V500] [V600] or [As selected by Architect from **manufacturer's full line of colors**].
 - 1) Size: [1/4 inch] or [1/16 inch].
 - d. Finish Coat: Clear, non-pigmented top coating.
 4. Solid Color System: Provide color for floor system based on the following.
 - a. Primer Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - b. Finish Coat: Clear, non-pigmented top coating.
 5. Platinum Color Pigment System: Provide color for floor system based on the following.
 - a. Primer Coat Color: Black.
 - b. Base Coat color: Black.
 - c. Platinum Color Pigment Coat: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**].
 - d. Finish Coat: Clear, non-pigmented top coating.
 6. Quartz Double Broadcast System
 - a. Primer Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's full line of colors**]
 - b. Base Coat Color: [<fill in the blank>] or [As selected by Architect from **manufacturer's**

- full line of colors].**
- c. Color Quartz: [**<fill in the blank>**] or [**As selected by Architect from manufacturer's full line of colors**].
- d. Grout Coat: Clear, non-pigmented coating over broadcast color quartz.
- e. Color Quartz: [**<fill in the blank>**] or [**As selected by Architect from manufacturer's full line of colors**].
- f. Finish Coat: Clear, non-pigmented top coating.
- g. Optional Second Finish Coat: Clear, non-pigmented top coating.
- 7. Clear System
 - a. Primer Coat: Clear, non-pigmented coating.
 - b. Finish Coat: Clear, non-pigmented top coating.

2.04 ACCESSORIES

- A. Non-Skid Floor Treatment: Crushed polypropylene beads broadcast directly onto surface of final coat.
 - 1. Acceptable Product: V Grip, distributed by Xtreme Engineered Floor Systems.
- B. Wall Base: 4 inch high, 1/4 inch thick, flexible vinyl base molding with 1 inch radiused quick seal bottom edge, includes inside and outside corners.
 - 1. Length: 4 feet.
 - 2. Color: White, coated with Hybrid XT resinous flooring.
 - 3. Acceptable Product: V Cove, distributed by Xtreme Engineered Floor Systems.
- C. Concrete Patch/Adhesive: 100 percent solids by volume, two part epoxy with resin binder and hardener.
 - 1. Application: Used for filling holes, voids, or air pockets in concrete, and as an adhesive for bonding wall base to concrete.
 - 2. Bond Strength: Failure in concrete, ASTM D4541.
 - 3. Compressive Strength: 9,000 psi; ASTM C579.
 - 4. Tensile Strength: 2,000 psi; ASTM C307.
 - 5. Work Time: Approximately 10 minutes at 75 degrees F.
 - 6. Recoat Time: After 3 to 5 hours, depending on ambient temperatures.
 - 7. Acceptable Product: Fast Patch, distributed by Xtreme Engineered Floor Systems, Inc.
- D. Cleaner: Highly concentrated non-toxic cleaner, non-corrosive with neutral pH, dye free, and biodegradable.
 - 1. Acceptable Product: Xtreme Clean, distributed by Xtreme Engineered Floor Systems.

PART 3 - EXECUTION

3.01 INSTALLERS

- A. System shall be installed by a certified installer approved by the manufacturer.

3.02 VERIFICATION OF CONDITIONS

- A. Verify that new concrete surfaces have cured for at least 30 days at 75 degrees F with 50 percent or less humidity; ACI 308R.
- B. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions and submit report of test results.
 - 1. Perform calcium chloride test in compliance with ASTM F1869.
 - a. Proceed with application of resinous flooring only after substrates have maximum moisture-

- vapor emission rate of 3 lb of water per 1,000 sq ft of slab area in 24 hours.
2. Perform plastic sheet test in compliance with ASTM D4263.
 - a. Proceed with application only after testing indicates absence of moisture in substrates.
 3. Perform relative humidity test using in position probes in compliance with ASTM F2170.
 - a. Proceed with application only after substrates have a 75 percent or less relative humidity level measurement.
- C. Alkalinity Testing: Verify that concrete substrate has pH within acceptable range of 7 to 9 as recommended by manufacturer.
1. Proceed with application only after substrates pass testing.

3.03 PREPARATION

- A. Prepare and clean concrete substrates in accordance with resinous flooring manufacturer's written instructions.
1. Provide clean, dry substrate for resinous flooring application.
 - a. Use manufacturer's recommended cleaning solution for cleaning existing concrete, unless noted otherwise.
 - b. Mix cleaning solution with water at dilution ratio recommended for this work; standard ratio is 1:128 or 1 ounce per gallon of water.
 2. Vacuum floor surface to leave the flooring substrate free from loose debris.
 3. Use degreaser on oil or grease saturated areas as necessary before grinding.
- B. Concrete Substrates: Provide solid and substantial concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants and debris incompatible with resinous flooring.
1. Acid etching of concrete substrate is not recommended.
- C. Clean concrete surface in preparation for resinous coating application in accordance with ASTM D4258.
1. Procedures include broom cleaning, vacuum cleaning, air blast cleaning, water cleaning, detergent water cleaning, and steam cleaning to remove loose materials on substrate surface.
 2. Clean surface using procedure as recommended by resinous flooring manufacturer in compliance with project requirements.
- D. Prepare concrete surface for resinous coating application in accordance with ASTM D4259.
1. Prepare concrete surface using diamond grinder and mechanically grind the concrete surface to remove existing contaminants and debris in compliance with project requirements.
- E. Joints: Prepare control and expansion joints by filling with properly prepared Hybrid XT flooring mixture as recommended by manufacturer.
- F. Concrete Repair: Repair holes or spalling in concrete and/or other areas that require patching by filling damaged areas with properly prepared Hybrid XT flooring mixture or concrete patching compound as recommended by manufacturer's installation guidelines.
1. Use of dry clean sand may be added to Hybrid XT flooring mixture to fill larger surface areas.
 2. Concrete Patch:
 - a. Ensure that substrate, resin, and hardener are within range of 60 to 90 degrees F prior to application.
 - b. Mix resin and hardener together for at least one minute until thoroughly blended.
 - c. Apply onto plaster's hawk or trowel board immediately after mixing and use trowel to apply concrete patch to repair area and remove excess material.
 - d. Do not apply more concrete repair material than can be top coated within 24 hours.

- G. When field quality control report indicates portions of concrete substrate are unsatisfactory, repeat process until field quality control report indicates there are no unsatisfactory portions remaining.

3.04 APPLICATION

- A. Apply components of resinous flooring system in accordance with manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness and characteristics indicated.
1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and to optimize adhesion between coats.
 2. Cure resinous flooring components in accordance with manufacturer's written instructions.
 3. Ensure the prevention of contamination during application and curing processes.
 4. Comply with resinous flooring manufacturer's written instructions for application at substrate expansion and control joints.
- B. Mixing: Pour equal parts of PART A and PART B into separate container, mixing with squirrel cage-type drill mixer attachment.
1. Product sets up rapidly; mix in manageable batches in accordance with project requirements.
 2. Mixing colored pigments; adhere to the following maximum quantities of one gallon PART A, plus one gallon PART B, plus one quart of colored pigment in accordance with project requirements.
- C. Full Chip Vinyl Broadcast System: Provide color for floor system based on the following:
1. Primer Coat: Apply colored primer coat at coverage rate of 350 to 400 sq ft per gallon.
 2. Base Coat: After 20 minutes, or when tacky to touch, apply colored base coat at 350 sq ft per gallon, and broadcast colored vinyl chips onto wet base coat.
 - a. After 30 minutes or when vinyl chips are set within curing base coat, remove excess chips from surface with tile scraper saving excess chips for future use.
 - b. Vacuum clean coated floor area.
 3. Grout Coat: Apply clear grout coat over floor area at coverage rate of 225 sq ft per gallon.
 - a. To ensure even coverage, broadcast additional colored vinyl chips within grout coat to fill-in light areas as necessary.
 4. Top Coats: After 30 minutes, when dry to touch, apply two clear top coats at coverage rate of 500 to 550 sq ft per gallon.
- D. Full Chip Mica Broadcast System: Provide color for floor system based on the following:
1. Primer Coat: Apply colored primer coat at coverage rate of 350 to 400 sq ft per gallon.
 2. Base Coat: After 20 minutes, or when tacky to touch, apply colored base coat at 350 sq ft per gallon, and broadcast colored mica chips onto wet base coat.
 - a. After 30 minutes or when mica chips are set within curing base coat, remove excess chips from surface with tile scraper saving excess chips for future use.
 - b. Vacuum clean coated floor area.
 3. Grout Coat: Apply clear grout coat over floor area at coverage rate of 225 sq ft per gallon.
 - a. To ensure even coverage, broadcast additional colored mica chips within grout coat to fill-in light areas as necessary.
 - b. Sanding Grout Coat Surface: Allow grout coat to cure properly after broadcasting colored macro sized mica chips, and prior to applying top coat, lightly sand off projecting edges of chips flush with grout coat surface saving excess chips for future use.
 - c. Vacuum clean coated floor area.
 4. Top Coats: After 30 minutes, when dry to touch, apply two clear top coats at coverage rate of 500 to 550 sq ft per gallon.
 5. Third Top Coat: After 30 minutes, or when second top coat is dry to touch, apply third top coat at a coverage rate of 500 to 550 sq ft per gallon.

- E. Vinyl Chip Random System: Provide color for floor system based on the following:
 - 1. Primer Coat: Apply colored primer coat at coverage rate of 350 to 400 sq ft per gallon.
 - 2. Base Coat: After 20 minutes, or when tacky to touch, apply colored base coat at 350 sq ft per gallon, and broadcast colored vinyl chips randomly onto wet base coat.
 - a. Avoid excessive coverage of chips, to ensure compliance with project requirements.
 - b. Coverage: Approximately 4 lbs of colored vinyl chips per 100 sq ft.
 - 3. Top Coat: After 30 minutes, or when dry to touch, apply clear top coat at coverage rate of 500 to 600 sq ft per gallon.

- F. Solid Color System: Provide color for floor system based on the following:
 - 1. Primer Coat: Apply colored primer coat at coverage rate of 350 to 400 sq ft per gallon.
 - 2. Top Coat: After 20 minutes, or when tacky to touch, apply colored finish coat to desired thickness in accordance with project requirements.

- G. Platinum Color Pigment System: Provide color for floor system based on the following:
 - 1. Primer Coat: Apply black colored primer coat at coverage rate of 200 sq ft per gallon.
 - 2. Platinum Color Pigment Coat: Apply Platinum Color Pigment coat at coverage rate of 100 sq ft per gallon.
 - a. Color Variations:
 - 1) Use a cordless leaf blower to create variations in color of coating as desired
 - or-
 - 2) Spray denatured alcohol over the surface of the wet coating for a variation in color.
 - 3. Top Coat: After 30 minutes, or when dry, apply clear top coat at coverage rate of 500 to 600 sq ft per gallon.

- H. Quartz Double Broadcast System
 - 1. Primer Coat: Apply colored primer coat at coverage rate of 350 to 400 sq ft per gallon.
 - 2. Base Coat: After 20 minutes or when tacky to touch, apply colored base coat at 125-200 sq ft per gallon, and broadcast colored quartz onto wet base coat at roughly 50 pounds per 100 sq ft.
 - a. When dry and quartz is set within curing base coat, remove excess quartz from surface by sweeping and vacuuming.
 - 3. Grout Coat: When dry apply clear base coat at 125-200 sq ft per gallon, and broadcast colored quartz onto wet base coat at roughly 50 pounds per 100 sq ft.
 - a. When dry and quartz is set within curing base coat, remove excess quartz from surface by sweeping and vacuuming.
 - 4. Top Coat: When dry, apply clear top coat at coverage rate of 125 to 150 sq ft per gallon.
 - 5. Optional Second Top Coat: When dry, apply clear top coat a coverage rate of 200-300 sq ft per gallon.

- I. Clear System
 - 1. Primer Coat: Apply clear top coat at coverage rate of 350 to 400 sq ft per gallon.
 - 2. Top Coat: Apply clear top coat at coverage rate of 100 to 400 sq ft per gallon or in accordance with project requirements.

- J. Wall Base: Adhere vinyl wall base to wall and floor with manufacturer's recommended adhesive, and apply resin mix to base before applying to floor in accordance with manufacturer's instructions.
 - 1. Comply with manufacturer's requirements for taping, mixing, troweling, sanding, and top-coating of wall base.
 - 2. Apply resin mix to rounded internal and external wall base corners.

3.05 FIELD QUALITY CONTROL

[PROJECT NO.]
[DATE]

[PROJECT NAME]
[PROJECT LOCATION]

- A. Testing Agency: **[Owner will engage]** or **[Engage]** a qualified independent testing agency to perform field tests and inspections and prepare test reports.
 - 1. Provide testing of concrete substrate as indicated in “Verification of Conditions” article, testing shall be conducted by an independent agency qualified according to ASTM C1077 and ASTM E329 for testing indicated.

3.06 CLEANING

- A. Wait at least 3 days after completion of installation before initial cleaning.
- B. Sweep and/or mop daily to remove dust and debris.
 - 1. Use a damp mop as necessary, using warm water and manufacturer’s recommended cleaner, rinse thoroughly.
 - 2. Use a machine to scrub floor as necessary, using warm water and a gentle detergent. Use non-abrasive scrubbing pads and scrub at low machine speed.
 - 3. Use caution when using new cleaners; test a patch of floor in an inconspicuous location to ensure cleaner will not harm the surface.
- C. If a leak or spill occurs, soak up material and dispose of cleaning materials properly in compliance with local regulations.

3.07 PROTECTION

- A. Protect Hybrid XT resinous flooring from damage and wear during the remainder of construction period.

END OF SECTION

[AUTHOR]
[FILE NAME]

HYBRID XT RESINOUS FLOORING
09 6724 - 9