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This MANU-SPEC[®] utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat*[™], *SectionFormat*[™] and *PageFormat*^{™0}. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate product model numbers, styles and types are used in Specifier Notes and in the specification text Article titled "Acceptable Material." Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies standard performance and high performance fluid-applied flooring systems as manufactured by Elite Crete Systems, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI MasterFormat for other section numbers and titles.

SECTION 09 96 56 EPOXY COATINGS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies epoxy and polyaspartic floor coatings.

Specifier Note: Revise Paragraph below to suit project requirements. Add section numbers and titles per CSI MasterFormat and specifier's practice.

- B. Related Requirements:

Specifier Note: Include in this Paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the Subparagraph below. Do not include Division 00 documents or Division 01 sections since it is assumed that all technical sections are related to all project Division 00 documents and Division 01 sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered part of the Contract.

1. Section [_____].

1.02 REFERENCES

Specifier Note: Paragraph below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References Paragraph when specifying products and installation by an industry reference standard. List retained standard(s) referenced in this section alphabetically. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Contract Conditions Section 01 42 00 - References may establish the edition date of standards. This Paragraph does not require compliance with standard(s). It is a listing of all references used in this section. Only include here standards that are referenced in the body of the specification in PARTS 1, 2 and/or 3. Do not include references to building codes at any level.

- A. Reference Standards:

1. ASTM International (ASTM):

- a. ASTM C882 Standard Test Method for Bond Strength of Epoxy Resin Systems Used With Concrete By Slant Shear
- b. ASTM D570 Standard Test Method for Compressive Properties of Rigid Plastics
- c. ASTM D638 Standard Test Method for Tensile Properties of Plastics.
- d. ASTM D645 Standard Test Method for Thickness of Paper and Paperboard.

- e. ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics.
- f. ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- g. ASTM D2240 Standard Test Method for Rubber Property Durometer Hardness.
- h. ASTM D4060 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- i. ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays. Comply with Section [01 31 00 - Project Management and Coordination].

Specifier Note: Add additional text to specify unusual or detailed coordination requirements affecting the work results of this Section.

1. [_____].

- B. Preinstallation Meetings: Conduct preinstallation meeting [one week] prior to commencing [work of this Section] [and] [on-site installations] to verify project requirements, substrate conditions and coordination with other building subtrades, and to review manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Section [01 31 19 - Project Meetings].

Specifier Note: Add additional text to describe requirements for meetings to coordinate products and techniques and to sequence related work for sensitive and complex items.

1. [_____].

- C. Sequencing: Sequence work of this section in accordance with Section [01 12 16 - Work Sequence] [and manufacturer's written recommendations for sequencing construction operations].

Specifier Note: Specify additional text as required to describe the particular sequence of events required to coordinate work that must be done in sequence with, or at the same time as, work in another section.

1. [_____].

- D. Scheduling: Schedule work of this Section in accordance with Section [01 32 13 - Scheduling of Work].

Specifier Note: Specify additional text to include requirements for coordinating work that requires unusual scheduling with work of other sections.

1. [_____].

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Contract Conditions and Section 01 33 00 - Submittal Procedures.

1.04 ACTION SUBMITTALS

- A. General: Submit listed submittals in accordance with Contract Conditions and Section [01 33 00 - Submittal Procedures].
- B. Product Data: Submit specified products as follows:
 - 1. Manufacturer's product data, including manufacturer's SPEC-DATA product sheet.
 - 2. Manufacturer's installation instructions.
 - 3. Catalog pages illustrating products to be incorporated into project.
 - 4. Material Safety Data Sheets (MSDS).

Specifier Note: Samples are full-size actual products intended to illustrate the products to be incorporated into the project. Sample submittals are commonly necessary for such characteristics as colors, textures, and other appearance issues.

- C. Samples: Submit as follows:

1. 12 inches x 12 inches (305 x 305 mm) samples of each epoxy flooring system specified to show color and texture with specified coats cascaded.

1.05 INFORMATION SUBMITTALS

Specifier Note: Specify submittal of test reports or evaluation service reports intended to document required tests without repeating the test requirements specified in Division 01.

- A. General: Submit listed submittals in accordance with Contract Conditions and Section [01 33 00 - Submittal Procedures].

B. Test and Evaluation Reports:

1. Certified test reports showing compliance with specified performance characteristics and physical properties.

Specifier Note: Specify submittals intended to document manufacturer installation, storage and other instructions.

C. Manufacturer's Instructions: Submit manufacturer's storage and installation instructions.

D. Source Quality Control: Submit documentation verifying that components and materials specified in this Section are from single manufacturer.

E. Qualification Statements:

1. Submit letter of verification for Manufacturer's Qualifications.
2. Submit letter of verification for Installer's Qualifications.

1.06 MAINTENANCE MATERIAL SUBMITTALS

Specifier Note: Specify by type and quantity extra stock materials to be provided for the Owner's use in facility operation and maintenance. Specify extra stock material characteristics in PART 2.

- A. Specify extra stock materials in accordance with Section [01 78 46 - Extra Stock Materials]. Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section [01 78 00 - Closeout Submittals].

Specifier Note: Revise this Subparagraph to specify size and percentage required for project.

1. Quantity: Provide minimum [_____] % of [product referenced in 1.01.A].
2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage, and protection of extra materials.

1.07 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer:
 - a. 10 years experience manufacturing components similar to or exceeding requirements of project.
 - b. Having sufficient capacity to produce and deliver required materials without causing delay in work.
 - c. Capable of providing field service representation during construction.
2. Installer: Acceptable to the manufacturer, experienced in performing work of this section and has specialized in installation of work similar to that required for this project.

Specifier Note: Retain the following Paragraph when certification related to sustainability submittals is a project requirement.

- B. Sustainability Standards Certification: Provide certification for [_____] materials certified by [certification organization's name] in accordance with [certification organizations standard].

Specifier Note: If a mock-up is required, retain Paragraph below.

- C. Mock-Up: Construct mock-up where [indicated] [directed] by [Owner] [Architect] [Consultant] in accordance with Section [01 43 00 - Quality Assurance].
 1. Construct showing [section subject matter] work.
 2. Dimensions and Process: Construct to [5 feet x 5 feet (1.52 m x 1.52 m)] using proposed procedures, colors, textures, finishes and quality of work.
 3. Purpose: To judge quality of work, substrate preparation, operation of equipment and material application.
 4. Locate [where directed] [where indicated].
 5. Do not proceed with work prior to receipt of written acceptance of mock-up.
 6. When accepted, mock-up will demonstrate minimum standard of quality required for this work. [Approved mock-up may [not] remain part of finished work.] [Remove mock-up and dispose of materials when no longer required and when directed by [Owner] [Architect] [Consultant].]

1.08 DELIVERY, STORAGE & HANDLING

A. Delivery and Acceptance Requirements:

1. Deliver material in accordance with Section [01 61 00 - Common Product Requirements] and in accordance with manufacturer's written instructions.
2. Deliver materials in manufacturer's original packaging with identification labels intact and in sizes to suit project.

B. Storage and Handling Requirements:

1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by

manufacturer.

C. Packaging Waste Management:

Specifier Note: The disposal of packaging waste into landfill sites demonstrates an inefficient use of natural resources and consumes valuable landfill space. Specifying appropriate packaging and construction waste management and disposal procedures may contribute to points required for USGBC's LEED® construction project certification.

Specifier Note: Include the following Subparagraphs to specify information that will provide direction to the Contractor for the disposal of construction waste materials using environmentally responsible methodology other than landfill resources.

1. Separate waste materials for [reuse] [and] [recycling] in accordance with [Section 01 74 19 - Construction Waste Management and Disposal].

Specifier Note: USGBC's LEED® certification includes credits for the diversion of construction waste from landfill. Diversion can be tracked by either weight or volume but must be consistent for all materials. Manufacturer may reclaim packaging and delivery materials for recycling.

2. Remove packaging materials from site and dispose of at appropriate recycling facilities.
3. Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate onsite bins] for recycling.
4. Fold metal and plastic banding, flatten and place in designated area for recycling.

Specifier Note: Add additional Subparagraphs to include pallets, crates, padding and other packing materials that are typically associated with the specified products.

5. Remove:
 - a. Pallets from site [and return to supplier or manufacturer].
 - b. [_____].

1.09 [FIELD] [SITE] CONDITIONS

Specifier Note: Specify the ambient conditions under which the work must be performed in order for the work results to provide the specified quality. Conditions can include factors such as temperature, humidity, lighting or conditions of completion of related work or substrates.

A. Ambient Conditions:

1. Installation Location: Assemble and erect components only when temperatures are above [55 degrees F (13 degrees C)].
2. Maintain materials, substrates and surrounding air temperature between [65 degrees F (18 degrees C)] [85 degrees F (29 degrees C)] and [73 degrees F (23 degrees C)] prior to, during, and 48 hours after completion of {product referenced in 1.1.1}

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equals" "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 EPOXY COATINGS

A. Manufacturer: Elite Crete Systems, Inc.

1. Contact: 1061 Transport Drive, Valparaiso, IN 46383; Phone: 888-323-4445, Phone: 219-465-7671, Fax: 219-531-0898; E-mail: info@elitecrete.com; Website: www.elitecrete.com.

Specifier Note: Substitution procedures must either be in the Contract Conditions or in Section 01 25 00 - Substitution Procedures. Do not include substitution procedures here.

2. Single Source Responsibility: Provide components and materials specified in this section from a single manufacturer.
3. Substitution Limitations:
 - a. Substitutions: [In accordance with [Contract Conditions] [Section 01 25 00 - Substitution Procedures] [No substitutions permitted].

B. Description:

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General

statements to comply with a particular code are typically addressed in Contract Conditions and Section 01 41 00 - Regulatory Requirements. Repetitive statements should be avoided.

- 1) Regulatory Requirements:
 - a) In accordance with Section [01 41 00 - Regulatory Requirements].
 - b) [_____].
- 2) Sustainability Characteristics:
 - a) [_____].
- 3) Compatibility:
 - a) Ensure components and materials are compatible with specified accessories and adjacent materials.

Specifier Note: System may be configured a number of ways using a variety of products, retain coatings and products below to conform to project requirements.

C. Epoxy Floor Coating:

Specifier Note: Primer is optional, retain if a vapor retarder is required.

1. Primer: E-100-VB5 Epoxy Vapor Barrier.

Specifier Note: Retain below if underlayment is required.

2. Underlayment: E100-UL7 Underlayment Epoxy.

Specifier Note Select base coat product below.

3. Base Coat: [E100-PT4 Standard Set Pigmented Epoxy] [E100-PT4 Fast Set Pigmented Epoxy] [SPARTIC-ALL RM- Clear Polyaspartic Coating] [E100-PT1] [E100-UV1].

Specifier Note: Insert color below or retain "as selected," if a color coat has been retained.

4. Color: [] [As selected by the Architect].

Specifier Note: Select top coat product below.

5. Top Coat: [E100-PT1 Standard] [E100-PT1 Fast Set] [E100-UV1] [SPARTIC-ALL RM- Clear Polyaspartic Coating] [E100-UV1].

Specifier Note: See manufacturer's product data for properties of protective coatings. Insert color or sheen below or retain "as selected,"

6. Protective Coat: [AUS-V] [E100-NV4] [E100-NV5]:
 - a. Color: [] [As selected].
 - b. Sheen: [] [As selected].

D. Materials:

Specifier Note: Primer is optional, retain if a vapor retarder is required.

1. Primer: E-100-VB5 Epoxy Vapor Barrier.
 - a. Percent Solids ASTM D3960: 58.
 - b. VOC Content ASTM D3960: 0 percent.
 - c. Bond Strength (ASTM D4541): Substrate failure >450 psi.
 - d. Perm Rating ASTM E96 > 5.0.

Specifier Note: Underlayment is optional, retain if required to repair and/or level uneven concrete substrate. May also be used to create a film buildable coating using fillers such as silica quartz or cellulose powder to give floor additional thickness and strength.

2. Underlayment: E100-UL7 Underlayment Epoxy.
 - a. Compressive Strength (ASTM D695): Not less than 12,000 psi.
 - b. Compressive Modulus (ASTM D695): Not less than 380,000 psi.
 - c. Concrete Bond Strength (ASTM C882):
 - d. Not less than 1000 psi in 245 hours.
 - e. Not less than 3500 psi in 7 days.
 - f. Absorption (ASTM D570): Not more than 0.15 percent.
 - g. Heat Deflection Temperature (ASTM D638): Not more than 135 degrees F.
 - h. Elongation at Break (ASTM D638): Not more than 3.5 percent.

3. Base Coat: E100-PT4 Pigmented Epoxy.
 - a. Percent Solids ASTM D3960: 100.
 - b. VOC Content ASTM D3960: 0 percent.
 - c. Compressive Strength (ASTM D645): Not less than 9000 psi.
 - d. Tensile Strength (ASTM D638): Not less than 7000 psi.
 - e. Flexural Strength (ASTM D790): Not less than 4000 psi.
 - f. Shore D Hardness (ASTM D2240): Not less than 83 (7 days).

Specifier Note: Insert color below or retain "as selected."

- g. Color: [] [As selected by the Architect].

Specifier Note: Retain top coat for system specified.

4. Top Coat: [E100-PT1] [E100-UV1] Clear Epoxy.
 - a. Percent Solids ASTM D3960: 100.
 - b. VOC Content ASTM D3960: 0 percent.
 - c. Compressive Strength (ASTM D645): Not less than 12,000 psi.
 - d. Tensile Strength (D638): Not less than 7100 psi.
 - e. Abrasion Resistance (ASTM D4060): Not more than 30 mg loss, CS-Wheel, 1 kg load at 1000 cycles.
 - f. Flexural Strength (ASTM D790): Not less than 7500 psi.
 - g. Shore D Hardness (ASTM D2240): Not less than 89 (7 days).
5. Polyaspartic Coating: SPARTIC-ALL RM- Clear Polyaspartic Coating:
 - a. Percent Solids ASTM D2369: 75.
 - b. VOC Content ASTM D2369: 122 g/l.
 - c. Compressive Strength (ASTM D645): At 73 degrees F:
 - 1) 8 Hours: 7300 psi.
 - 2) 1 Day: 11,200 psi.
 - 3) 7 Days: 14,100 psi.
 - d. Tensile Strength (D638): Not less than 7100 psi, with elongation at break of 9.2 percent.
 - e. Abrasion Resistance (ASTM D4060): Not more than 30 mg loss, CS-Wheel, 1 kg load at 1000 cycles.
 - f. Flexural Strength (ASTM D790): Not less than 11,100 psi at 7 days.
 - g. Shore D Hardness (ASTM D2240): Not less than 89 at 7 days.

Specifier's Note: See manufacturer's literature for properties and recommendations on the following three protective coatings:

6. Protective Coat: E100-NV4 Novolac Protective Coating.
 - a. Compressive Strength (ASTM D695): Not less than 9000 psi.
 - b. Tensile Strength (D638): Not less than 6550 psi.
 - c. Flexural Strength (ASTM D790): Not less than 8400 psi.
 - d. Ultimate Elongation ASTM D638: Not more than 4.1 percent.
 - e. Shore D Hardness (ASTM D2240): Not less than 89 (7 days).
 - f. Abrasion Resistance (ASTM D4060): Not more than 18 mg loss, CS-17 Wheel, 1 kg load at 500 cycles.
 - g. Heat Deflection Temperature (ASTM D648): Not more than 118 degrees F.
7. Protective Coat: E100-NV5 High Performance Novolac Protective Coating.
 - a. Compressive Strength (ASTM D695): Not less than 12,000 psi.
 - b. Tensile Strength (D638): Not less than 6900 psi.
 - c. Flexural Strength (ASTM D790): Not less than 8800 psi.
 - d. Ultimate Elongation ASTM D638: Not more than 3.8 percent.
 - e. Shore D Hardness (ASTM D2240): Not less than 89 (7 days).
 - f. Abrasion Resistance (ASTM D4060): Not more than 18 mg loss, CS-17 Wheel, 1 kg load at 500 cycles.
 - g. Heat Deflection Temperature (ASTM D648): Not more than 126 degrees F.
8. Protective Coat: AUS-V.
 - a. Percent Solids ASTM D2369: 75.
 - b. VOC Content ASTM D2369: 0 percent.
 - c. Abrasion Resistance (ASTM D4060): Not more than 17 mg loss, CS-Wheel, 1 kg load at 500 cycles.
 - d. Flexibility ASTM D522: No crack or defects on a 1/8 inch mandrel.
 - e. Adhesion to E100-UV1 (ASTM D4541): Substrate failure >450 psi.

- f. Water Spot Resistance Watch Glass - 24 hrs. - No water spotting: No water spotting.
 - g. Blush Resistance ASTM 4640 - No amine blush.
- E. Mixes:
- 1. Mix components in accordance with manufacturer's written instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions prior to fluid-applied flooring installation.
- 1. Inform [Owner] [Architect] [Consultant] of unacceptable conditions immediately upon discovery.
 - 2. Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval from [Owner] [Architect] [Consultant].]
 - 3. [_____].

Specifier Note: Specify actions required to prepare the surface, area or site for incorporation of the section's primary products. Describe requirements for exposure or removal of existing assemblies, components, products or materials.

3.02 PREPARATION

Specifier Note: Specify preparatory work required prior to installation/application/erection of primary products.

- A. Surface Preparation: Prepare surface in accordance with manufacturer's written recommendations and coordinate with Section [01 71 00 - Examination and Preparation].
- 1. [_____].

Specifier Note: Specify preparatory work, such as selective removal of existing work, required prior to execution of new work. Specify requirements for exposure or removal of existing assemblies, components, products or materials.

- B. Demolition/Removal:
- 1. [_____].

3.03 APPLICATION

- A. Coordinate application of components in accordance with Section [01 73 13 - Application].
- 1. Apply components in accordance with manufacturer's written instructions.

3.04 CLEANING

- A. Perform cleanup in accordance with Section [01 74 00 - Cleaning and Waste Management] and Section [01 74 13 - Progress Cleaning].
- B. Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 23 - Final Cleaning].

Specifier Note: Specify special measures needed to minimize waste, collect recyclable waste and dispose of or recycle field-generated construction waste created during demolition, construction or final cleaning.

- C. Waste Management:
- 1. Coordinate recycling of waste materials with [01 74 19 - Construction Waste Management and Disposal].
 - 2. Collect recyclable waste and dispose of or recycle field generated construction waste created during demolition, construction or final cleaning.
 - 3. Remove recycling containers and bins from site.
 - 4. [_____].

Specifier Note: Specify protection methods completed after installation, but prior to acceptance by the owner. Protection of surrounding areas and surfaces during application or installation is included under PART 3, Preparation. Include only statements unique to this Section.

Specifier Note: Coordinate the following Article with Section 01 76 00 - Protecting Installed Construction.

3.05 PROTECTION

- A. Protect installed product from damage during construction in accordance with Section [01 76 00 - Protecting Installed Construction].

B. Repair damage to adjacent materials caused by [insert section subject matter] installation.

C. [_____].

Specifier Note: Specify attachments such as schedules, tables, illustrations or forms in this location if they are not incorporated directly within the specification text.

3.06 ATTACHMENTS

Specifier Note: Schedules are sometimes placed in the specifications rather than on the drawings. Include schedules that indicate item/element/product/equipment, location and other coordinating data.

A. Schedules:

1. [_____].

END OF SECTION