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SPECIALTY COATING SYSTEMS

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SECTION 033543

POLISHED CONCRETE FINISH

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Polished Concrete Finish System - Westcoat Fast Stain Polish System, a complete polished concrete system using multiple step mechanical process, concrete densifier, optional concrete dye stain and polish guard in accordance with the specified requirements to produce:
1. Aggregate Exposure [A] [B] [C]
 2. Concrete Appearance [1] [2] [3] [4]
 3. [] SC-36 Fast Stain (Dye Stain)

1.2 DEFINITIONS

- A. Terminology: As defined by Concrete Polishing Council (CPC) glossary.
1. Definitions.
 2. Aggregate Exposure Chart.
 3. Concrete Appearance Chart.

1.03 RELATED SECTIONS

1. Section [01 33 00 Submittal Procedures]
2. Section [03 01 30 Maintenance of Cast-in-Place Concrete].
3. Section [03 30 00 Cast-in-Place Concrete]
4. Section [07 91 16 Joint Fillers]
5. Section [09 61 19 Concrete Floor Staining]

1.04 REFERENCES

- A. American Concrete Institute
1. ACI 302. 1R, Guide for Concrete Floor and Slab Construction

1.05 SUBMITTALS

- A. Product Data: Manufacturer's technical literature for the following:
1. Densifier: SC-20 Sodium Silicate or SC-21 Lithium Silicate
 2. Polish Guard: SC-24 Polish Guard
 3. Optional Dye Stain: SC-36 Fast Stain
 4. Dye Stain Color Chart: SC-36 Fast Stain
- B. Polisher/Applicator Qualifications: Data for company, principal personnel, experience, and Westcoat Qualified Contractor/Applicator Status.

1.06 QUALITY ASSURANCE

- A. Polisher Qualifications:
 - 1. Experience: Company that has successfully completed five projects similar in design, products, and extent to scope of this Project; with a record of successful in-service performance; and with sufficient production capability, facilities, and personnel to produce specified work.
 - 2. Polished Concrete Contractor must be a Westcoat Qualified Contractor/Applicator (QCA).
- B. Manufacturer Qualification:
 - 1. All materials used in the Polished Concrete System shall be manufactured and provided by a single manufacturer to ensure compatibility.
 - 2. Minimum 5 years documented experience in producing concrete materials.
- B. Field Mock-up: Before performing work of this Section, provide following field mock-up to verify selections made under submittals and to demonstrate aesthetic effects of polishing. Approval does not constitute approval of deviations from Contract Documents, unless Architect specifically approves deviations in writing.
 - 1. Form, reinforce, and cast concrete slab for 10 foot square field mock-up.
 - 2. Concrete shall be same mix design as scheduled for Project.
 - 3. Placement and finishing work shall be performed by same personnel as will place and finish concrete for Project.
 - 4. Mock-up shall be representative of work to be expected.
 - 5. Perform grinding, honing, and polishing work as scheduled for Project using same personnel as will perform work for Project.
 - 6. Approval is for following aesthetic qualities:
 - a. Compliance with approved submittals.
 - b. Compliance with specified aggregate exposure class.
 - c. Compliance with specified appearance level.
 - d. Compliance with specified color.
 - 7. Obtain Architect's approval before starting work on project.
 - 8. Protect and maintain approved field mock-ups during construction in an undisturbed condition as a standard for judging completed work.
- C. Pre-Installation of Concrete Conference: Prior to placing concrete for areas scheduled for polishing, conduct conference at Project to comply with requirements of applicable Division 01 Sections.
 - 1. Required Attendees:
 - a. Owner.
 - b. Architect.

- c. Contractor, including supervisor.
 - d. Concrete producer.
 - e. Concrete finisher, including supervisor.
 - f. Concrete polisher, including supervisor.
 - g. Technical representative of liquid applied product manufacturers.
2. Minimum Agenda: Polisher shall demonstrate understanding of work required by reviewing and discussing procedures for, but not limited to, following:
- a. Tour field mock-up and representative areas of required work, discuss and evaluate for compliance with contract documents, including substrate conditions, surface preparations, sequence of procedures, and other preparatory work performed by other installers.
 - b. Review contract document requirements.
 - c. Review approved submittals and field mock-up.
 - d. Review procedures, including, but not limited to:
 - 1) Applicable Division 03 Section on cast-in-place concrete
 - a. Specific mix design.
 - b. Specified curing methods/procedures.
 - c. Projected 3, 14, and 28 day compressive strength test for finished floor and project phasing.
 - d. Protection of concrete substrate during construction and prior to polishing process.
 - e. Project phasing and scheduling for each step of grinding, honing and polishing operations including, but not limited to:
 - i. Quality of qualified personnel committed to project.
 - ii. Quality and size of grinders committed to project.
 - iii. Proper disposal of concrete slurry and/or concrete dust.
 - f. Details of each step of grinding, honing, and polishing operations.
 - i. Application of color.
 - ii. Application of liquid applied products.
 - iii. Protecting polished concrete floors after polishing work is complete.
3. Reports: Record discussions, including decisions and agreements reached, and furnish copy of record to each party attending.

1.07 DELIVERY, STORAGE & HANDLING

- A. Delivery: Materials shall be delivered to the job site in sealed, undamaged containers. Each container shall be clearly marked with manufacturer's label showing type of material, color, and lot number.
- B. Storage: Store all materials in a clean, dry place with a temperature range in accordance with manufacturer's instructions.
- C. Handling: Handle products carefully to avoid damage to the containers. Read all labels and Safety Data Sheets prior to use.

1.08 FIELD CONDITIONS

- A. Damage and stain prevention: It is the responsibility of others to prevent damage and staining of concrete surfaces to be polished.
 - 1. Prohibit use of markers, spray paint, and soapstone.
 - 2. Prohibit improper application of liquid membrane film forming curing compounds.
 - 3. Prohibit vehicle parking over concrete surfaces.
 - 4. Prohibit pipe-cutting operations over concrete surfaces.
 - 5. Prohibit storage of any items over concrete surfaces for not less than 28 days after concrete placement.
 - 6. Prohibit ferrous metals storage over concrete surfaces.
 - 7. Protect from petroleum, oil, hydraulic fluid, or other liquid dripping from equipment working over concrete surfaces.
 - 8. Protect from acids and acidic detergents contacting concrete surfaces.
 - 9. Protect from painting activities over concrete surfaces.
- B. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting liquid applied product application.

1.09 WARRANTY

- A. Upon completion of the work in this section provide a written warranty from the manufacturer against defect of materials. To obtain project specific warranty the coating system applicator must be a Westcoat Qualified Contractor/ Applicator and apply for warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufacturer: Westcoat Specialty Coatings; 4007 Lockridge Street, San Diego, CA 92102. Telephone 800-250-4519. Fax 619-262-8606. Website: www.westcoat.com.
- B. Substitutions: No Substitution.

2.02 MATERIALS

- A. Fast Stain Polish System:
 - 1. Densifier: SC-21 Lithium Silicate 200 to 400 square feet per gallon.
 - 2. Stain: SC-36 Fast Stain 200 to 400 square feet per gallon.
 - 3. Guard: SC-24 Polish Guard 2000 to 2500 square feet per gallon

2.03 ACCESSORIES

- A. Supplemental Materials:
 - 1. Patching materials: TC-29 Concrete Patch. Contact Westcoat for additional patching materials.
 - 2. Joint Filler: Hi-Tech Systems or Metzger Mcguire
 - 3. Grouting Materials: Contact Westcoat for approved grouting material options.
 - 4. Slab Protection: Ramboard or Skudo.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Acceptance of Surfaces and Conditions:
 - 1. Examine substrates to be polished for compliance with requirements and other conditions affecting performance.
 - a. Concrete finished floor flatness according to applicable Division 03 Section on cast-in-place concrete.
 - b. Concrete curing methods according to applicable Division 03 Section on cast-in-place concrete.
 - c. Concrete compressive strength according to applicable Division 03 Section on cast-in-place concrete.
- B. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents.
- C. Starting work within a particular area will be construed as acceptance of surface conditions.

3.02 SURFACE PREPARATION

- A. Cleaning New Concrete Surfaces:
 - 1. Prepare and clean concrete surfaces.
 - 2. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, paint splatter, and other contaminants incompatible with liquid applied products and polishing.

3.03 INSTALLATION

- A. Install Polished Concrete System in accordance with manufacturer's instructions.

- B. Mix all materials in accordance with manufacturer's instructions.
- C. Use application equipment, tools, and techniques in accordance with manufacturer's instructions.
- D. Uniformly apply products at spread rates and in number of coats to achieve specified coverage.
- E. Adhere to all limitations, instructions, and cautions for Polished Concrete System as stated in the manufacturer's published literature.
- F. Provide gloss and aggregate exposure requirements in accordance to Concrete Polishing Council terminology.
- G. Perform necessary process to meet approved aggregate exposure and appearance in accordance with Concrete Polishing Council's Polished Concrete Aggregate Exposure Chart and Concrete Polishing Council's Polished Concrete Appearance Chart. See the following:

Aggregate Exposure Chart		
Class	Name	Surface Exposure, %
A	Cream Fines	85 – 95% Cement Fines 5 – 15% Fine Aggregates
B	Fine Aggregate	85 – 95% Fine Aggregates 5 – 15% Blend of Cement Fines and Coarse Aggregates
C	Coarse Aggregate	80 - 90% Coarse Aggregate 10 - 20% Blend of Cement Fines and Fine Aggregates
<p>Aggregate exposure class denotes the surface exposure after grinding and polishing operations. The density, size and distribution of the aggregates at the surface depends on the concrete mix design and placing and finishing operations. Floor flatness at the time of grinding and polishing operations is an important consideration in selecting the appropriate aggregate exposure class. Surface exposure percentages are based on visual observation of the overall area of the polished floor.</p>		

Appearance Chart				
Level	Name	Reflective Clarity	Image Clarity Value, % ASTM D5767, D4039	Haze Index ASTM D4039
1	Flat (Ground)	Images of objects being reflected have a flat appearance.	0 - 9	< 10
2	Satin (Honed)	Images of objects being reflected have a matte appearance.	10 - 39	
3	Polished	Images of objects being reflected do not have a sharp and crisp appearance but can easily identified.	40 - 69	
4	Highly Polished	Images of objects being reflected have a sharp and crisp as appearance as would be seen in a near-mirror like reflection. May require grouting.	70 - 100	

3.04 FIELD QUALITY CONTROL

- A. Verify other materials are as specified.
- B. Verify coverages and finish of the system as work progresses.
- C. Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of Polished Concrete System.

3.05 PROTECTION AND CLEAN-UP

- A. Installation areas must be kept free from traffic and other trades during the application procedure and cure time.
- B. Protect finished surfaces of Polished Concrete System from damage during construction.
- C. Touch-up, repair or replace damaged Polished after substantial completion.
- D. Clean area and remove all debris upon completion of work. Dispose of empty containers properly according to current Local, State and Federal regulations.
- E. Allow material to cure 4 to 6 hours before light pedestrian traffic is permitted, 24 hours before heavy traffic and an additional 48 hours before heavy objects are placed on the surface.

3.06 MAINTENANCE

- A. Contractor shall provide to owner, maintenance and cleaning instructions for the Polished Concrete System upon completion of work. Owner is required to clean and maintain the surfaces to maintain manufacturer's warranty.