

SECTION 09 61 00
POLISHED CONCRETE FINISHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Polished concrete finishing.
- B. Related Requirements:
 - 1. Section 03 30 00 "Cast-in-Place Concrete" for requirements for concrete slab.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Installer, manufacturer's representative, and installer of concrete slabs that are to be polished.
 - a. Meeting shall occur following receipt of initial submittals.
 - b. Meeting shall occur not more than 30 days from project Notice to Proceed.
 - 2. Review methods and procedures related to polished concrete finishing, including manufacturer's written instructions and requirements for a mock-up.
 - a. Placement of the concrete slab.
 - 1) Concrete mix design for polished concrete slabs.
 - 2) Placement of control joints in poured slab.
 - 3) Protection of the slab during curing and prior to polishing/finishing.
 - b. Location for field sample.
 - c. Surface preparation and application procedure.
 - d. Final appearance for polished concrete.
 - e. Coordination of other work.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Provide manufacturer concrete finishing system description, including technical data for all products intended for use, and written installation procedures.
- B. Shop Drawings: Submit plan showing polished concrete surfaces and schedule of polishing operations for each area. Include locations of all joints, including construction joints. Indicate phasing of concrete polishing, where required.
- C. Polishing Schedule: Include dates for placement of concrete, concrete curing, start and completion of polishing operations, per phase.
 - 1. Include dates for placement and finishing of Field Color Samples and Field Sample Panels (Mock-ups).

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Material Certificates: Demonstrating compliance with specified performance requirements.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. A company specializing in polished concrete floor finishing, with not less than 3 years experience with work similar to that of this project.
 - 2. An employer of workers trained and approved by manufacturer.
 - 3. Member of the Concrete Polishing Association of America (CPAA).
 - 4. Trained in, and holding current manufacturer's certification for, the system specified.

- B. Field Sample Panels (Mock-ups): Provide a separate Field Sample Panel for each color combination and finish selected by Architect. Field sample panels shall include control joints and demonstrate workmanship and expected range of finish, color, and appearance.
 - 1. Field Sample Panels shall be not less than 10 feet x 10 feet.
 - a. Coordinate location of field sample panels with Owner and Architect.
 - 1) Locate field sample panels where they will remain undamaged until polished concrete finishing is complete.
 - 2) If acceptable to Owner and Architect, field sample panels may occur in location that will be concealed by permanent construction.
 - b. Notify Owner and Architect not less than seven days in advance of commencing finishing operations.
 - 2. Field Sample Panels that are rejected by Architect shall be re-constructed based on Owner/Architect input, until field sample panels are approved.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Deliver materials in original containers, with seals unbroken, bearing manufacturer labels. Protect from freezing.

1.8 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Protect the concrete slab from damage or contamination by construction activity prior to polishing, including but not limited to:
 - 1. Protect from petroleum stains, including stains from construction machinery, vehicles and hydraulic equipment.
 - 2. Protect from stains resulting from materials stored on the slab, such as reinforcing steel.
 - 3. Protect from acids or acidic detergents.
 - 4. Protect from mechanical damage from heavy equipment and foreign objects caught in rubber tires.

PART 2 - PRODUCTS

2.1 POLISHING SYSTEM

- A. Provide floor polishing compliant with the Basis of Design RetroPlate System, by Advanced Floor Products, or comparable system and products by one of the following:
 - 1. Bomanite.
 - 2. FGS PermaShine system, by L&M Construction Chemicals, a Laticrete brand
 - 3. PROSOCO.
- B. Manufacturer: The RetroPlate System was developed by Advanced Floor Products, which is a division of Curecrete Distribution, Inc., a Curecrete Chemical Company.
- C. Source Limitations: Provide all products from one source, from a single manufacturer.
 - 1. Products not available by the polished concrete finishing system manufacturer shall be approved by the manufacturer, in writing.
- D. Bidder may submit Request for Substitution for Basis of Design system and products PRIOR TO BID per Section 01 60 00 – Product Requirements.
 - 1. Request for substitution must include a complete description of the proposed system, detailed product information, and certification by the manufacturer that products meet stated performance requirements.
- E. Finish Schedule: Refer to the Finish Schedule included at the end of this section for additional information about polished concrete Types.

2.2 PERFORMANCE REQUIREMENTS

- A. NFSI High Traction: Floor finish product must be certified by NFSI as 'High-Traction' based on NFSI High-Traction Phase 2 testing.
- B. Abrasion Resistance: ASTM C779, Method A, high resistance, no more than 0.008 inch wear in 30 minutes.

- C. Reflectivity: Increase of 30% as determined by standard gloss meter.
- D. Waterproof Properties: 70 percent or greater reduction in absorption based on Rilem Test Method 11.4.
- E. Products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.3 MATERIALS

- A. Hardner, Sealer, Densifier: Retro-Plate 99.
 - 1. Zero VOC, chemically reactive concrete sealer formulated to harden and improve the density of concrete surfaces, leaving no surface film.
- B. Joint Filler:
 - 1. Two component, self-leveling, 100% solids, rapid curing polyurea joint filler with Shore 80 or higher hardness.
- C. Cleaning Solution: CreteClean Plus, with Scar Guard.
 - 1. Mild, highly concentrated liquid concrete cleaner and conditioner; biodegradable, environmentally safe.
- D. Stain and Etch Protection: RetroGuard.
 - 1. Water based copolymer.
 - 1.2. Application: All polished concrete floors indicated to receive RetroPel.
- D.E. Surface Stain Repellant: RetroPel.
 - 1. Penetrating, water based fluoropolymer stain repellent.
 - 2. Application: All polished concrete floors that do not receive surface sealer.
- E.F. Surface Sealer: RainguardPro Polyurethane HD.
 - 1. Two-component, water-based, zero VOC, aliphatic polyurethane coating.
 - 2. Application: Polished concrete floors in the Servery and Restrooms.
 - a. At the Servery and food service areas: One coat of surface sealer.
 - b. At the Restrooms: Two coats of surface sealer.
- F.G. Accessory Materials:
 - 1. Transition Strips: Use at transition to flooring of different height.
 - a. Basis of Design: Schluter, Reno-Ramp K.
 - 2. Aluminum Grit: Flooring system manufacturer's recommended aluminum grit additive for surface sealer, for slip-resistant surfaces.
 - 3. Neutralizing Agent: Tri-sodium Phosphate.
 - 4. Water: Potable.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Close areas to be finished from all traffic during and following floor finishing.

3.2 EXAMINATION

- A. Examine substrate for conditions affecting performance of finish. Rectify conditions detrimental to timely and proper work.
- B. Verify that base slab meets finish and surface requirements.
- C. Newly placed concrete shall be at least 45 days old before commencing finishing operations.
- D. Verify that floor surfaces are free of construction damage and contaminants.
- E. Repair of defective concrete is the responsibility of this section.
- F. Proceed with Work only after unsatisfactory conditions are corrected.

3.3 CONCRETE POLISHING, GENERAL

- A. Adhere to industry standard grinding, honing, and polishing procedures for dry and wet grinding and honing.
- B. Equipment: Grinder must be not less than 36 inch, and 20 horse power, with floor scrubber.
- C. Level of Polish: High Gloss, 1800 grit.

- D. Commence polished concrete finishing in the presence of the manufacturer's representative.
- E. Apply polished concrete finish system to cured and prepared slabs to match accepted field sample.
 - 1. Machine grind floor surfaces to receive polished finishes level and smooth and to depth required to reveal aggregate to match approved field sample.
 - 2. Install joint filler at control joints and decorative joints, as indicated.
 - 3. Scrub and rinse slab surface with clean water and vacuum with auto-scrubber between and after final passes.
 - 4. Apply hardener, stains, and surface conditioner in sequence and according to manufacturer's written instructions, allowing recommended drying time.
 - 5. Sequence grinding course-to-fine grit, using a wet or dry method, to indicated gloss level.
 - a. Sequential progression of grinding steps shall be limited to no more than double the grit value of the previous grind.
 - 6. Perform each pass perpendicular to the other pass north/south then east/west; multiple passes may be needed.
 - 7. Apply liquid concrete repair material to fill gaps, voids and pop-outs during grinding operation per manufacturer's published recommendations.

3.4 POLISHING

- A. All edges must be included in every pass for every grit and made to blend with the rest of the floor.
- B. Perform grinding and apply hardening in accordance with manufacturer's, instructions.
- C. Control Joints:
 - 1. Form weakened-plane contraction joints by saw-cutting concrete, located as indicated.
 - 2. Cut 1/8-inch-wide joints before concrete develops random contraction cracks.
 - 3. Construct control joints for a depth equal to at least one-third of concrete thickness.
 - 4. Control joints to be filled with polyurea joint filler and shaved prior to the grinding and polishing process.
- D. Grind concrete to a full sand exposure with minimal top size aggregate exposure.
 - 1. Sequential progression of polishing steps are required, with no more than double the grit value of the previous step.
 - 2. Grinding and polishing steps are all at least 3 passes, and shall include not less than the following:
 - a. 50 grit metal.
 - b. 50 grit ceramic.
 - c. 100 grit ceramic.
 - d. 200 grit ceramic.
 - e. 400 grit resin.
 - f. 800 grit resin.
 - g. 2 coats of Hardener/Sealer/Densifier.
 - h. 1500 grit resin (2 passes).
 - i. 1800 grit resin (2 passes).
 - j. 2 coats of Hardener/Sealer/Densifier.
 - 1) First coat at 250 SF/gal.
 - 2) Second Coat at 350 SF/gal.
- E. Following cure of final coats of Hardener/Sealer/Densifier, clean surface with manufacturer's cleaning solution.
- E.F. Stain and Etch Protection: Apply stain and etch protection coating according to flooring system manufacturer's recommendations.
- F.G. Surface Sealer: Apply surface sealer according to flooring system manufacturer's recommendations, and as indicated.
 - 1. Apply Surface Sealer with slip-resistant aluminum grit additive where indicated.

3.5 CLEAN UP AND DISPOSAL

- A. Control and dispose of waste products produced by grinding and polishing operations.

1. Dispose of concrete slurry legally; dumping of slurry into on-site slurry pit is not permitted. Separate slurry into a solid that can be disposed of in trash bin or dumpster. Water byproduct from separation shall have pH below 9 and above 6.

B. Neutralize and clean polished floor surfaces and protect until Substantial Completion.

3.6 FINISH SCHEDULE

A. Provide finish type indicated below at locations indicated on the drawings.

B. Immediately contact Architect for clarification if discrepancies or conflicts are encountered

DRAWING DESIGNATION	APPLICATION	FINISH COAT	Remarks
PCONC-1	Stain repellent	Surface stain repellent	Typical, unless noted otherwise.
PCONC-2	Sealed	Surface Sealer	One coat surface sealer at food service areas. Two coats surface sealer at restrooms.
PCONC-3	Slip-resistant	Surface sealer with aluminum grit additive	One coat surface sealer with aluminum grit.

END OF SECTION 09 61 00