

## **SECTION 03543 - POLISHED CONCRETE FLOOR FINISHES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:**
- 1. Grinding and Polishing of interior concrete slab.**
  - 2. Application of reactive surface densifier.**
  - 3. Application of stain guard surface treatment.**
  - 4. Progressive polishing of slab surface.**
- B. Related Sections:**
- 1. Section 01330 – Submittal Procedures**
  - 2. Section 03300 – Cast in Place Concrete**
  - 3. Section 07900 – Joint Sealers: Joint filler and sealants for interior slabs.**
- C. Furnish all labor, materials, equipment and services for the Work of this Section.**

#### **1.2 SUBMITTALS**

- A. Section 01330 - Submittal Procedures: Procedures for Submittals.**
- B. Product data for: (Must Accompany Bid)**
- 1. Manufacturer and model of equipment to be used, including all types of grinding heads (diamonds) and dust extraction system.**
  - 2. Concrete liquid reactive surface densifying system including stain guard treatment.**
- C. Contractor Qualifications:**
- 1. Provide list of a minimum of 10 projects performed within last three years of similar type, size, and complexity. Submit project names, addresses, contacts, and phone numbers for each project. This list must accompany the bid.**
  - 2. Submit letter of certification from manufacturers of all products and equipment specified herein, stating that the applicator is a certified applicator of the system and is familiar with proper procedures and installation methods as required by the manufacturer. All certifications must accompany the bid.**
  - 3. Polished concrete contractor has to have been regularly performing Polished Concrete work for at least 3 years prior to bid with manufacturer certifications or job history verifying this point. This is to be submitted with the bid.**
- D. Closeout Documents: Submit in accordance with Section 01770.**
- 1. Maintenance Data: Submit 7 sets of maintenance data as follows:**
    - a. Manufacturer's technical product data and literature.**
    - b. Storage and handling requirements and recommendations.**
    - c. Methods of maintaining polished concrete, including a listing of approved cleaning and stain removal products and procedures.**
    - d. Manufacturer's recommended maintenance schedule.**
    - e. Precautions for cleaning materials and methods that could be detrimental to polished concrete.**
    - f. Manufacturer's safety data sheets and related safety requirements.**

### **1.3 QUALITY ASSURANCE**

#### **A. Regulatory Requirements:**

- 1. Accessibility Requirements:** Comply with applicable requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAGs) for Buildings and Facilities; Final Guidelines, revisions, and updates for static coefficient of friction for walkway surfaces.
- 2. Environmental Requirements:** Comply with current Federal and local toxicity and air quality regulations and with Federal requirements on content of lead, mercury, and other heavy metals. Do not use solvents in floor polish products that contribute to air pollution.

#### **B. Mock Up: Prior to commencement of work, prepare mock up for evaluation of surface preparation techniques and application workmanship.**

- 1. Designate 250 square feet for mock up of system specified, using same materials, tools, equipment, and procedures intended for actual surface preparation at location determined by the General Contractor. Include properly prepared slab joints. Include slab edges adjoining existing partitions/walls.**
- 2. Notify Architect a minimum 7 days prior to date and time when mockups will be performed and completed.**
- 3. Demonstrate proposed range of aesthetic effects and workmanship.**
- 4. Obtain approval of mockups before proceeding with work.**
- 5. Maintain mockups during construction in undisturbed condition as a standard for judging completed work. Approved mockups may become part of the completed work if acceptable.**

#### **C. Pre-Installation Meeting:**

- 1. Schedule meeting a minimum of one day prior to first polishing of existing concrete slab and one week prior to placement of new slabs.**
- 2. Notify all required attendees in writing of scheduled time and meeting location at least two weeks in advance. Include copy of agenda.**
- 3. Require attendance of all entities directly affecting work, including, but not limited to the following. Attendees shall include all personnel directly involved in overseeing and who have authority to control the work.**
  - a. General Contractor**
    - 1) Project Manager**
    - 2) Superintendent**
  - b. Concrete Polishing Subcontractor**
    - 1) Project Manager**
    - 2) Foreman**
  - c. Concrete Finisher**
    - 1) Project Manager**
    - 2) Foreman**
  - d. Architect**
- 4. Convene meeting only when all required parties are in attendance.**

5. Review the following:
  - a. Environmental requirements.
    - 1) Installation of controls to limit damage from excessive dust caused by resilient floor tile removal, surface preparation and final polishing.
    - 2) Installation of controls to limit damage from moisture.
    - 3) Compliance with manufacturers' written instructions for substrate temperature and moisture content, ambient temperature, and humidity, ventilation and other conditions affecting product performance.
    - 4) Area shall be closed to traffic during floor finish application and after application, for a time as recommended by finish manufacturer(s).
  - b. Scheduling and phasing of work.
  - c. Coordination with other work and personnel.
  - d. Protection of adjacent surfaces.
  - e. Surface preparation.
  - f. Repair of slab defects and defective work including cost responsibility.
  - g. Application of liquid densifier.
  - h. Application of protective surface treatment.
  - i. Final cleaning/polishing.
  - j. Field quality control methods.
6. Record, type, print and distribute minutes of meeting to all parties in attendance within 5 days of the meeting.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in original, factory sealed, unopened, new containers (drums) bearing manufacturer's name and label intact and legible, with the following information:
  1. Name or title of material.
  2. Manufacturer's standard container (drum) numbers.
  3. Application instructions.
- B. Dispense penetrating liquid densifier only from factory sealed and numbered containers (drums).
- C. Maintain record of container (drum) numbers received and used during floor treatment.
- D. Storage:
  1. Store materials in protected and well-ventilated area at temperatures between 40 and 90 degrees F unless otherwise required by manufacturer.
  2. Keep containers sealed until ready for use.
  3. Do not use materials beyond manufacturer's shelf life limits.
- E. Handling: Protect materials during handling and application to prevent damage or contamination.

#### 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Limit and control damage from excessive dust caused by surface preparation and polishing.
- B. Limit and control damage from moisture.
- C. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting product performance.

- D. All replaced concrete shall be cured a minimum of 28 days or until such point equipment can be put on slab without displacing aggregate.

## 1.6 SEQUENCING AND SCHEDULING

- E. Comply with approved schedule for sequence of operations for grinding and polishing operations.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Subject to compliance with project requirements, provide products and equipment by the following:

1. Concrete Polishing Solutions (877) 472-8200 [www.go2cps.com](http://www.go2cps.com)
2. Convergent Concrete Technologies (866) 375-2280 [www.convergentconcrete.com](http://www.convergentconcrete.com)
3. HTC (877) 482-8700 [www.htc-america.com](http://www.htc-america.com)
4. Advanced Floor Products (801) 812-3420 [www.retroplatesystem.com](http://www.retroplatesystem.com)
5. American Decorative Concrete Supply (479) 725-0033 [www.ameripolish.com](http://www.ameripolish.com)
6. Prosoco (800) 255-4255 [www.prosoco.com](http://www.prosoco.com)
7. Pullman-Ermator (800) 232-2635 [www.pullman-ermator.com](http://www.pullman-ermator.com)
8. VMC Technical Assistance Corp (800) 460-4862 [www.vmctac.com](http://www.vmctac.com)

- B. Substitutions: Not permitted.

### 2.2 EQUIPMENT

- A. Contractor to furnish minimum three grinding/polishing machines (HTC 800, CPS 320 or similar) in full operating condition during the duration of work.
  1. Planetary, counter rotating variable speed floor grinder (3 or 4 head).
  2. Minimum 700 pounds of downward pressure.
- B. Dust extraction system, pre-separator, and squeegee attachments with minimum flow rating of 322 cubic feet per minute.
- C. Generators are required to provide power. The Polished Concrete Contractor is to provide a minimum of two, each capable of running two classic (HTC 800 or similar) grinding machines concurrently to expedite work.
- D. Allowable Grinding Heads:
  1. Metal Bonded Diamonds:
    - a. Grit Size: 40, 80, or 150.
    - b. Use of metal bonded diamonds shall be for removal of existing epoxy coating only, unless approved in writing prior to alternate use.
  2. Resin Bonded, Phenolic Diamonds
    - a. Grit Size: Raptor L-1, Raptor L-2, 100, 200, 400, or 800.
  3. Grinding/Polishing Pads for Edges:
    - a. Grit Size: 60, 100, 120, 200, 400, 800, 1500, and 3000.
- E. Hand grinder with dust extraction attachment and pads.

- F. High speed propane burnisher:
  - 1. Minimum 27 inch head generating pad speeds of 1,500 RPM or higher, as verified with tachometer.
- G. Diamond Impregnated Pads
  - 1. Twister Diamond Cleaning System Pads, by HTC.
  - 2. Diamond Polishing Pads, by Norton.
  - 3. SpinFlex Diamond Polishing Pads, by CPS.
- H. Applicator pad:
  - 1. Professional Mighty Mop 077, by Quickie.
  - 2. 24" Microfiber Wet Room Pad, by Rubbermaid.

## **2.3 PRODUCTS**

- A. Joint Filler
  - 1. Polyurea joint filler as specified in Section 07900.
- B. Penetrating Hardener/Densifier: Clear liquid reactive lithium-silicate based.
  - 1. Retroplate 99 by Advanced Floor Products.
  - 2. Consolideck LS, by Prosoco.
  - 3. Approved equal by other manufacturer specified herein.
- C. Protective Surface Treatment (Stain Guard):
  - 1. RetroGaurd 99 by Advanced Floor Products.
  - 2. Consolideck LS Guard, by Prosoco.
  - 3. Approved equal by other manufacturer specified herein.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine slab in the presence of the certified applicator, identifying all defects. Correct conditions detrimental to timely and proper work.
- B. Do not proceed until unsatisfactory conditions are corrected as noted below.

### **3.2 SLAB PREPARATION**

- A. Close areas to traffic during and after floor finish application for time period recommended by product manufacturer(s).
- B. Clean Substrate: Removal of surface contaminants to ensure penetration of reactive surface densifier. No hazardous, flammable, toxic or solvent based cleaning materials are permitted.
  - 1. Remove dust and loose material by brushing, sweeping, and vacuuming.
  - 2. Remove curing, sealing and coating agents, oil, breaking compound residue, wax, and grease by mechanically scraping off heavy deposits. Remove remaining residues using Wax and Curing Compound Remover.
  - 3. Remove deep-set oil and grease stains.
  - 4. Remove paint residue.
  - 5. Remove grease and general soiling with cleaner/degreaser diluted as recommended by manufacturer in an auto scrubber.

6. Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water.
7. Thoroughly rinse floor surface to remove soap residue and contaminants.
8. Squeegee dry.

C. Fill slab joints in accordance with Section 07900.

D. Repair all slab defects.

E. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and contaminants.

F. Protect surrounding and adjacent surfaces in accordance with floor finish manufacturer's written recommendations. Do not apply tape to the floor. If floor is damaged by tape installation or removal, repair damage.

G. Grind slab surface with 40, 80 or 150-grit metal-bonded diamond grinding heads.

H. Progressively polish slab surface with 100 or 200-grit resin-bonded, phenolic diamond heads. Clean slab with wet auto scrubber between polishing passes.

I. Apply reactive surface densifier per manufacturer's instructions. .

J. Polish slab with 400, 800 and 1500 grit resin-bonded, phenolic diamond heads.

K. Apply protective surface treatment per manufacturer's instructions. Draw out material to thin film with applicator pad.

L. Slowly burnish slab with 400, 800 or 1,500 grit diamond impregnated pad.

1. Burnisher, pad and pace of forward movement shall combine to develop a minimum floor surface temperature of 91° F directly below the burnishing pad, as measured by the operator during installation.

M. Progressive edge grinding will be necessary along all vertical abutments.

### 3.3 FINISH REQUIREMENTS:

A. Gloss: Final surface gloss shall be a Specified Overall Gloss Value (SOGV) of not less than 45 and Minimum Local Gloss Value (MLGV) of 30 as measured using a Horiba IG-320 Gloss Checker.

B. Slip Resistance: Measured static coefficient of friction (SCOF) shall be not less than 0.50 as measured in accordance with ASTM C 1028.

C. Leave work complete and ready for final inspection by Architect.

### **3.4 PROTECTION**

- A. General Contractor shall protect areas to receive polished concrete finish at all times during construction to prevent oils, dirt, metal, excessive water, paint and other potentially damaging materials from affecting the finished concrete surface. Protective measures listed below shall begin immediately after completion of and polishing.**
- 1. Inform all subcontractors and trades that slab must be protected at all times.**
  - 2. Protect slab surface from moisture for 72 hours to prevent re-emulsification of surface treatment prior to cure.**
  - 3. Diaper all hydraulic equipment to avoid staining.**
  - 4. Allow no pipe cutting machines on the finished slab.**
  - 5. Do not place wood pallets directly on slab surface for 72 hours. Use face down carpet to separate moisture in wood from contact with concrete surface.**
  - 6. Do not place steel on the finished slab to avoid rust staining.**
  - 7. Prevent contact with acids and acidic detergents.**
  - 8. Require use of drop cloths during all painting. Immediately wipe clean spilled paint.**

**END OF SECTION**