



SECTION 03-35-43

CONCRETE POLISHING SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Work in this section applies to the mechanical polishing and coloring of interior concrete floor surfaces.
- B. Applying concrete densifying impregnator/hardener and polishing to specified sheen level and aggregate exposure.

1.02 SUBMITTALS

- A. Submittal Package: Prior to commencement of work, submit all product data sheets for concrete impregnators/hardeners, grinding equipment, and vacuum systems to be used.
- B. Installation contractor's qualification history/data
- C. Samples: Prior to commencement of work, provide mock-up if required. See 1.07 Mock-Up.
- D. Contract Closeout Submittals: Provide 2 copies of the recommended cleaning and maintenance instructions for the installed floor system to the Owner's Representative.

1.03 QUALITY ASSURANCE

- A. A signed certificate by the manufacturer declaring the contractor is an approved installer of the products/system.

1.04 DELIVERY, STORAGE AND HANDLING OF PRODUCT

- A. Delivered materials to the site shall be in factory sealed containers, clearly labeled and marked with manufacturer's name, address, batch number, and date of manufacture. Material Safety Data Sheets must accompany materials upon arrival.
- B. Store materials in accordance with manufacturer's printed instructions. Furthermore, materials to be used in conjunction with the application of this system shall be stored indoors, protected from damage and maintained at a temperature no lower than 55 degrees.

1.05 CONCRETE MIX DESIGN

- a. Concrete shall have a 5 to 5-½ sack mix or higher and be non-air entrained.
- b. Any admixtures, plasticizers, slag, fly ash or anything taking the place of Portland-based cement should not exceed 20%.

- c. The cement shall be Portland Cement Type 1, conforming to ASTM C 150.
- d. Maintain concrete temperature below 85 degrees. Keep concrete as cool and moist for as long as possible. In essence, decrease rate of hydration and drying to minimize cracking.
- e. Wet cures are most suitable, but if this cannot be achieved, use a dissipating cure and seal. If the cure and seal has not dissipated before grinding has begun, extra cost may be incurred for its removal.
- f. Use one source for cement, aggregates and pozzolans throughout the job. Monitor and control incoming material consistency. Do not use calcium chloride-based admixtures. Non-chloride admixtures may be used.
- g. Wash out all drums before loading. Keep slumps consistent with a maximum of 4. Minimize driver added water maintaining a .45 water content ratio.
- h. Slab shall be protected from indentation, contaminants and footprints during pour and curing.
- i. Complete up to three passes with a power trowel to create smooth, dense, hard-troweled finish. Do not burn the concrete.
- j. Place concrete to achieve as true and smooth a top surface as possible. Mounds or dips are not acceptable. GC shall control overall flatness and levelness, including on sloping areas to within tolerances permitted by specification – ASTM E1155. Recommended flatness (FF) rating of at least 40 and level (FL) rating of 30.

1.06 PROJECT/SITE CONDITIONS

- A. Floor areas to be polished are to be free and clear of all obstacles including racking, fixtures and temporary equipment and materials to provide an open and uninhibited concrete slab.
- B. Protection: General Contractor shall protect areas to receive concrete finish at all times during construction to prevent oils, dirt, metal, excessive water and other potentially damaging materials from affecting the finished concrete surface. Protection measures listed below shall begin immediately after the concrete slab is poured.
 - a. All hydraulic powered equipment shall be diapered to avoid staining of the concrete.
 - b. All vehicle parking shall be prohibited on the finish slab area. If necessary to complete their scope of work, drop cloths shall be placed under vehicles at all times.
 - c. No pipe cutting machine shall be used on the finish floor slab.
 - d. Steel shall not be placed on the finish slab to avoid rusting.
 - e. Acids and acidic detergents will not be exposed to the slab.
 - f. All painters will use drop cloths on the concrete. If paint gets on the concrete, it must be immediately removed.
 - g. All trades will be informed that the slab must be protected at all times.
- C. The slab must cure a minimum of 28 days before system installation is initiated.
- D. Block off areas to traffic for the duration of the system's installation.
- E. Ensure that adequate lighting has been installed to support surface preparation and application.

1.07 MOCK-UP

- A. Install a completed 10'x 10' sample of the proposed system at location determined by the Owner's Representative.

1.08 WARRANTY

- A. The installer shall furnish a SINGLE SOURCE warranty for their system for a minimum period of one year.



PART 2 PRODUCTS / SYSTEM

2.01 SYSTEM MANUFACTURER / PROVIDER

- A. System: **ModernCrete Concrete Polishing**
2339 Kramer Lane
Austin, TX 78758
512-331-5555
Contact – estimating@moderncrete.com
- B. Products: RetroPlate Densifier or Prosoco Consolideck® LS® Densifier, Prosoco LS® Guard Penetrating Sealer, Ameripolish Concrete Dye
- C. Vacuum: HEPA H-13 rated filter with 311 cubic feet per minute air flow vacuum system
- D. Equipment: 3 head or 4 head counter rotating variable speed HTC Superfloor™ Approved Floor Grinder with at least 600 pounds down pressure. Examples: HTC 2500IX, HTC 950RX or HTC 800
- E. Substitutions: No substitutions allowed for system or materials
- F. Select Gloss**
1. Level 1 - Low Gloss - at a distance of 100 feet, the floor will reflect images from side lighting.
 2. Level 2 - Medium Gloss - at a distance of 30 to 50 feet, the floor will clearly reflect from side and overhead lighting.
 3. Level 3 - High Gloss - Looking straight down, the floor will clearly reflect overhead and side light, with the appearance of the floor looking wet.
- G. Select Aggregate Exposure:**
1. Cream Polish – no intentionally aggregate exposure
 2. Salt & Pepper – sand is exposed
 3. Pea Gravel – small aggregate is exposed
 4. Full aggregate – medium to large aggregate is exposed
- H. Select color, if any, from color chart**

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify Condition of interior concrete to be polished
- B. Confirm concrete has cured for 28 or more days
- C. Accept or reject concrete for polishing

3.02 APPLICATION

- A. Polishing
1. 25-grit and or 40-grit metal bond diamonds are used, as needed, to clean, smooth and expose the aggregate.
 2. 80-grit metal, 80-grit and 100-grit resin diamonds are used to create a uniform scratch pattern.



3. The concrete is dry polished to the level of gloss ordered by the client using the appropriate 200-grit, 400-grit, 800-grit, 1500-grit and 3000-grit resin bond diamonds.
 4. All edges will be polished around the perimeter, support beams and all recessed areas in the floor to within ½ an inch.
 5. Drains & other sloped areas will be hand tooled to blend with the main floor.
- B. Densifier
1. A penetrating concrete densifier/sealer/hardener is applied to the floor. The densifier is a proprietary blend of silicates and other components in a water based solution. It chemically reacts with calcium hydroxide and calcium carbonate to form strong, durable calcium silicate hydrate (CSH).
 2. The densifier offers the following benefits:
 - a. Provides a dustproof surface
 - b. Hardens the concrete by as much as 25%
 - c. Improves abrasion resistance
 - d. Improves reflectivity
- C. Coloring the concrete floor
1. Color is added to the floor (if ordered) in a two-step process After the 200-grit polishing step and after the 400-grit polishing grind
- D. Apply Penetrating (non-film forming) stain resistant sealer
1. Apply a thin even coat
 2. Sealer should be applied in multiple applications with sufficient material applied so that the surface remains wet for a few minutes before penetration into the concrete,
 3. Puddles should be broomed out thoroughly until they completely penetrate into the surface.
 4. The floor must be burnished with a high-speed burnisher or floor-buffing machine equipped with a black stripping pad to remove excess Finish Coat from the surface.

3.03 CLEANUP

- A. Dispose of used materials in accordance with local regulations. Concrete dust collected from the installation of the system shall be the responsibility of the originator of the work.

3.04 PROTECTION

- B. Advise all other contractors, vendors and others working in the areas completed that the concrete slab surface is the finished floor and is to be protected per installer's instructions.
- C. Do not allow chemical spills, cutting of materials or sliding of steel to occur on the finished surface because damage can occur.
- D. Follow installer's instruction for cleaning to ensure proper protection from dirt and debris.

3.05 INSPECTION

- A. Request acceptance of the finished floor by the Owner's Representative.
- B. Correct all unacceptable work to the satisfaction of the Owner's Representative.

END OF SECTION