



SECTION 03 35 10 (replaces sections 03350 and 03360)  
Special Concrete Floor Finishes: Dry Polished Concrete Surfaces,  
High Tolerance Floors, New Concrete, with Color Dye Alternate  
(GUIDE SPEC)

1.01 SUMMARY

- A. Section Includes: All equipment labor, tools and training for the contracted work.
- B. Base Bid:
1. Polished Concrete – Floorcare USA/L&M-FGS PermaShine Dry Concrete Polishing System at designated areas.
  2. Five resin-bound, sequential diamond grit passes, last grit level to be determined by owner. Additional passes may be required if floor does not meet floor finish criteria.
  3. Two coat application of penetrating sealer/hardener/densifier FGS Hardener Plus.
  4. Alternate: Dyed & Polished Concrete. Contractor shall provide an alternate price for Dyed & Polished Concrete in lieu of polished concrete.
- C. Related Sections: *03 30 00 Cast-in-place concrete*
1. *Minimum concrete compressive strength of 23MPa (3500 psi)*
  2. *Normal weight concrete and no lightweight aggregate*
  3. *Non-air entrained*
  4. *Natural concrete slump of 114.3 to 127-mm (4.5 to 5 in.) admixtures may be used.*
  5. *Flatness requirements: ASTM International E115; minimum (laser screed installed is preferred to achieve best results)*
    - a. *Overall FF50 or higher*
    - b. *Local FF35 or higher*
    - c. *Overall FL not required*
    - d. *Local FL not required*
  6. *Tight hard troweled (three passes) concrete. No burn marks. Reference American Concrete Institute (ACI) 302.1 R, Guide for Concrete Floor and Slab Construction, class 5 or class 6 floor.*
  7. *Curing options*
    - a. *ASTM International C 309, Standard Specification for liquid membrane-forming compounds for curing concrete. Preferred curing compound: L&M Cure*
    - b. *No acrylic curing and sealing compounds*
    - c. *ASTM C 171, Standard Specification for sheet materials for curing concrete.*
    - d. *Damp curing, seven-day cure; with concrete being properly cured at optimum temperatures and atmospheric conditions if in a controlled environment (high water to cement mix ratio design MUST BE AVOIDED)*
  8. *Confirmation of minimum concrete specifications being met*
    - a. *GC or Concrete Contractor must provide concrete polisher written confirmation from independent, 3<sup>rd</sup> party test firm that the slab meets minimum stated guidelines and quality standards prior to implementing polishing process.*

## 1. Section 07 92 16 Semi-Rigid Joint Sealants

- D. Allowances: Refer to Section 01 21 00 for allowances involving the work in this section.

### 1.02 REFERENCES

- A. Valid and current certificate of training for FGS PermaShine installer
- B. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute
- C. ACI 301 – Specifications for Structural Concrete for Buildings; American Concrete Institute
- D. ACI 302.1R – Guide for Concrete Floor and Slab Construction; American Concrete Institute
- E. ASTM C 779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces, procedure A.
- F. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996
- G. NFSI Test Method 101-A - National Floor Safety Institute Standard for evaluating high traction flooring materials, coatings and finishes. [www.nfsi.org](http://www.nfsi.org).

### 1.03 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 00
- B. Product Data:
  - 1. Submit manufacturer's descriptive literature and product technical data sheet, product specifications and Material Safety Data Sheets (MSDS) for each product.
  - 2. Submit a letter of certification from the National Floor Safety Institute confirming the system has been tested and passed phase two level of certification when tested by method 101-A.
  - 3. Preparation and concrete grinding procedures.
  - 4. Confirm two applications of the FGS Hardener Plus liquid.
  - 5. Joint filing, crack repair and/or surface repair products and protocols.
  - 6. Maintenance Data: provide data on maintenance renewal of applied treatments.
  - 7. Colored Concrete, Dye selection guides.
  - 8. Current Certified FGS PermaShine Installer documentation.
- C. Shop Drawings:
  - 1. Indicate typical layout including dimensions and floor grinding schedule.
  - 2. Plan view of the floor and joints clearly marked for the work and the sealer.
  - 3. Indicate areas to receive colored surface treatment.

### 1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualification: Company specializing in products and procedures specified in this Section with three years experience.

- B. Installer Qualifications: Acceptable to Manufacturer with documented current FGS certificate and performance on projects of a similar nature.
- C. Mock up
  - a. Construct mock-up area under conditions similar to those which will exist during actual placement, at least 100 square feet, with curing methods and treatments applied.
  - b. Locate where directed.
  - c. Mock-up may remain as part of the Work if satisfactory and protected from damage.
- D. Protection: The Concrete floor finish is the final finish. General Contractor responsible for, but not limited to:
  - a. Protect from all petroleum stains during construction
  - b. Diaper all hydraulic powered equipment.
  - c. Do not park vehicles on inside slab.
  - d. No pipe cutting machines will be used on inside floor slab.
  - e. Do not place reinforcing steel on interior slab, to avoid rust stains.
  - f. Do not use acids or acidic detergents on slab.
  - g. Inform all trades that the slab is to be protected at all times.
  - h. Mechanically scrub floor with approved cleaner, FGS Conditioner, once a day for 7 days immediately prior to final acceptance per floor system manufacturer.

#### 1.05 PRE-INSTALLATION MEETING

- A. General contractor will convene all parties and conduct pre-installation meeting in accordance with Section 01 31 00.
- B. Convene pre-installation meeting a minimum of seven days prior to placement of concrete for work of this section. Assure purchase of specified materials for fielding sample work or mock- ups.
- C. Review Pre-installation Check list.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section 01 65 00 and Section 01 66 00.
- B. Protect packaging and product and from damage, loss and freezing.
- C. General Contractor shall assure proper materials and amounts have been procured and applied to the project. Written confirmation shall be submitted prior to issuance of warranty.

#### 1.07 WARRANTY

- A. Comply with provisions of Section 01 78 00.
- B. Warrant installed units to be free from defects in material and workmanship for one year.
- C. Include coverage for the use of FGS Conditioner.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Floorcare USA and L&M Construction Chemicals, Inc. 14851 Calhoun Road, Omaha, NE 68152 Toll Free (800) 362-3331, 402-453-6600, [www.lmcc.com](http://www.lmcc.com), [www.fgs-permashine.com](http://www.fgs-permashine.com)
- B. Substitutions: Not permitted

## 2.02 MANUFACTURERS AND PRODUCTS

### A. Acceptable Products and Manufacturers:

1. FGS Hardener Plus, liquid type, hardener, sealer, and densifier by L&M Construction Chemicals, Inc. Omaha, NE
2. Joint Tite 750, plural component, polyurea polymer, semi-rigid joint filler by L&M Construction Chemicals, Inc. Omaha, NE
3. Petrotex, Oil repellent sealer by L&M Construction Chemicals, Inc. Omaha, NE
4. Vivid Concrete Dyes, by L&M Construction Chemicals, Inc. Omaha, Nebraska.
5. FGS Concrete Conditioner, liquid type, by L&M Construction Chemicals, Inc., Omaha, Nebraska.

### B. Substitutions: Not permitted

## 2.03 EQUIPMENT

- A. Only as approved by the L&M/FGS system manufacturer.
- B. Includes: Elliptical and/or planetary grinding and polishing equipment
- C. High Performance, Pulse vacuum units, with heppa filters.
- D. Mechanical plural component pumps for joint and crack filler material.

## 2.04 FINISHES

The degree of polish and finish level, as well as the number of passes to be determined by condition of the floor and by the Approved Applicator and the owner's representative on field mock up.

Levels of possible finish to be determined: i.e.,

(Note to specifier: Select one of the following, depending upon aesthetic requirements. Finish appearance greatly influenced by the condition and the quality of the concrete finish.)

- A. 800 grit finish- Low Gloss
- B. 1500 grit finish- Medium Gloss
- C. 3000 grit finish- High Gloss
- D. Two applications of FGS Hardener Plus liquid as applied by certified FGS installers after final polish step is completed.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Examine conditions and proceed with work in accordance with Section 01 71 00
- B. Verify that concrete surfaces are acceptable to receive the work of this section.

- C. Concrete shall have been cured a minimum of 28 days, or shall attain a minimum of 3,500 psi prior to beginning any part of the L&M/FGS system. Exceptions must be confirmed in writing by L&M /FGS System manufacturer.

### 3.02 PREPARATION

- A. Examine the surface to determine soundness of the concrete for polishing
- B. Remove all surface contamination to permit effective polishing

### 3.03 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 302.1R. Paragraph 8.3.11. Class 5 and class 6 floors.
- B. Concrete surfaces that are scheduled to be polished require a hard steel-trowel finish (three passes) during placement.

### 3.04 FLOOR SURFACE TREATMENT

- A. Install FGS Hardener Plus in accordance with manufacturer's printed instructions.
- B. Install with dry polishing and airborne concrete dust-free conditions.

### 3.05 FIELD QUALITY CONTROL

- A. General: Comply with requirements of Section 01 45 00
- B. Inspection by manufacturer's representative for proper installation

### 3.06 ADJUSTMENTS:

The following may incur additional charges over and above the contract amount.

- A. Polishing to higher gloss as the work requires
- B. Filling of joints to ensure smooth traffic passage over joints

### 3.07 CLEANING

- A. Prior to final acceptance, the FGS Treated floor shall be mechanically scrubbed for seven days with soft to medium pads (white or red pads) with approved cleaning solution.
- B. Cleaning solution is FGS Concrete Conditioner liquid by L&M Construction Chemicals, Inc. Omaha, NE.

### 3.08 ALTERNATE FOR DYED AND FGS POLISHED CONCRETE

- A. All the above information applies to this application.
- B. Special attention needs to be made for transition from dyed and polished concrete to other finishes. A straight-line transition shall occur in these areas. Verify the exact location for the demarcation line.
- C. Procedure for dyed polished concrete
  - a. Polish concrete to one step prior to final finish level. (i.e., 400 grit resin level if the final desired finish is 800 grit.) See section 2.04.
  - b. Apply selected diluted L&M Vivid Dyes to concrete prior to final polish and finish level.
  - c. Allow dye to dry. Remove residue with dry mechanical buffer. Reapply as necessary for desired result.
  - d. Commence final polishing step to obtain desired gloss level.
  - e. Apply two coats of hardener/sealer/densifier, FGS HARDENER PLUS, in accordance with manufacturer's written instructions.

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