

SECTION 03350

CONCRETE FINISHING

This section includes surface finishing of concrete floor slabs and toppings, including special finishing sometimes encountered with slab finishing. Coordinate text of this section with Sections 03300 and 03390.

ACI 318 referenced by ICC codes for structural concrete does not address concrete finishing. ACI 302.1 is primary reference for floor and slab finishing.

Manufacturers listed in this section were identified as representative and not as an endorsement for meeting this specification. For additional product information, visit 4Specs at www.4specs.com, ARCAT at www.arcat.com, Reed Construction Data FirstSource at www.firstsourceonl.com, SpecSource at www.specsource.com, and Sweets at www.sweets.construction.com.

This section includes performance, proprietary, and descriptive type specifications. Edit to avoid conflicting requirements.

Contact the CSRF Support Center at supportcenter@csrf.org to submit comments or suggestions for improvements to this specification. Visit the SPECTEXT web site at www.spectext.com for current product announcements.

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Finishing concrete floors [and floor toppings].
 - 2. Floor surface treatment.

- B. Related Sections:
 - 1. Section 03300 - Cast-in-Place Concrete: [Prepared concrete floors ready to receive finish;] [control and formed expansion and contraction joints and joint devices].
 - 2. Section 03360 - Concrete Finishes: Exposed aggregate finish.
 - 3. Section 03390 - Concrete Curing.
 - 4. Section 05810 - Expansion Joint Cover Assemblies.
 - 5. Section 07900 - Joint Sealers.

1.2 REFERENCES

List reference standards included within text of this section. Edit the following for Project conditions.

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 302.1 - Guide for Concrete Floor and Slab Construction.
- B. ASTM International:
 - 1. ASTM E1155 - Standard Test Method for Determining Floor Flatness and of Levelness Using the F-number System.

1.3 SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on [concrete hardener,] [sealer,] [curing compounds] [curing papers] [and] [slip resistant treatment], compatibilities, and limitations.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on maintenance renewal of applied [coatings.] [_____].

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with [ACI 301] [and] [ACI 302.1].
- B. Perform Work in accordance with [[State] [Municipality] of [_____]] [Highways] [Public Work's] standard.]

Include the following paragraph only when cost of acquiring specified standards is justified.

- C. Maintain [one copy] [[_____] copies] of [each] document on site.
- D. Floor Finishers:

In this paragraph, list concrete finishers acceptable for this Project.

- 1. [_____].
- 2. [_____].
- 3. [_____].

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum [three] [_____] years [documented] experience.
- B. [Applicator] [Installer]: Company specializing in performing work of this section [with minimum [_____] years [documented] experience] [_____].

1.7 MOCK-UP

Use this article for full sized erected assemblies required for review of construction, coordination of Work of several sections, testing, or observation of operation.

- A. Section 01400 - Quality Requirements: Requirements for mockup.
- B. Construct mock-up area under conditions similar to those which will exist during actual placing, [_____] feet ([_____] m) long by [_____] feet ([_____] m) wide, with specified finishes, and coatings applied.
- C. Locate [where directed by Architect/Engineer.] [where indicated on Drawings.]
- D. Incorporate accepted mockup as part of Work.

***** [OR] *****

- E. Remove mockup [when directed by Architect/Engineer.] [_____].

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Deliver materials in manufacturer's packaging including application instructions.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01600 - Product Requirements: Environmental conditions affecting products on site.

In the following paragraphs, consider affect on related Work and site operations regarding these requirements.

- B. Temporary Lighting: Minimum [200] [_____] W light source, placed 8 feet (2.5 m) above floor surface, for each 425 sq ft (40 sq m) of floor being finished.
- C. Do not finish floors until interior heating system is operational.

***** [OR] *****

- D. Temporary Heat: Ambient temperature of 50 degrees F (10 degrees C) minimum.
- E. Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

1.10 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate the Work with concrete floor placement and concrete floor curing.

PART 2 PRODUCTS

2.1 MANUFACTURERS

In this article, list manufacturers acceptable for this Project.

- A. Manufacturers:
 - 1. [Cresset Chemical Company] Model [_____].
 - 2. [Davis Colors] Model [_____].
 - 3. [Dayton Superior Corp.] Model [_____].
 - 4. [Euclid Chemical Co.] Model [_____].
 - 5. [L & M Construction Chemicals] Model [_____].
 - 6. [Master Builders Inc.] Model [_____].
 - 7. [Nox-Crete Chemicals] Model [_____].
 - 8. [Scofield: L M Scofield Co.] Model [_____].
 - 9. [Sika Corp.] Model [_____].
 - 10. [_____] Model [_____].
 - 11. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

2.2 COMPOUNDS - HARDENERS AND SEALERS

When manufacturers are listed for individual finishing materials, delete article above.

- A. Chemical Hardener: [Magnesium fluorosilicate and zinc fluorosilicate blend] [dry powder] [liquid] [_____] type.
 - 1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- B. Metallic Hardener: Premixed, [dry powder,] [colored,] [static disseminating,] [light reflective,] [oxidizable metallic,] [spark resistant,] [_____] hardener.
1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- C. Non-Metallic Hardener: Premixed, [dry powder,] [colored,] [clear,] [emery aggregate,] [quartz aggregate,] abrasion resistant hardener.
1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- D. [Colored] Sealer: [_____] type.
1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- E. [Exposed Aggregate] Retarder for Flat Surfaces: [_____] type, [_____] color as selected from manufacturer's standard range.
1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

2.3 SLIP RESISTANT TREATMENT

- A. Slip Resistant Finish: [Aluminum oxide] [Silica sand] [_____] type, [_____] color as selected from manufacturer's standard range.
1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

***** [OR] *****

- B. Abrasive Aggregate: [95 percent minimum fused homogeneous aluminum oxide,]
[Crushed emery, minimum 45 percent aluminum oxide,] [ferric oxide, minimum 25
percent,] [Silicone carbide].
 - 1. Manufacturers:
 - a. [_____] Model [_____].
 - b. [_____] Model [_____].
 - c. [_____] Model [_____].
 - d. Substitutions: [Section 01600 - Product Requirements] [Not Permitted].

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify floor surfaces are acceptable to receive the Work of this section.

3.2 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with [ACI 301] [and] [ACI 302.1].
- B. Wood float surfaces receiving [quarry tile,] [ceramic tile,] [cementitious terrazzo,] [and]
[_____] with full bed setting system.
- C. Steel trowel surfaces receiving [carpeting,] [resilient flooring,] [seamless flooring,] [thin
set terrazzo,] [thin set quarry tile,] [thin set ceramic tile,] [and] [_____].
- D. Steel trowel surfaces which are [scheduled] [indicated] to be exposed.
- E. In areas with floor drains, maintain design floor elevation at walls; slope surfaces
uniformly to drains [at [1/8] [1/4] [_____] inch per foot ([10] [20] [_____] mm
per m) nominal.] [as indicated on Drawings.]

3.3 FLOOR SURFACE TREATMENT

Include the following paragraph when floor hardener is required; supplement with additional paragraphs
for specific hardener requirements.

- A. Apply [dry shake] [liquid] hardener [as scheduled] on floor surfaces.

***** [OR] *****

Include the following paragraph when slip resistant finish is required; supplement with additional paragraphs for specific requirements.

B. Apply slip resistant finish [as scheduled] on floor surfaces.

***** [OR] *****

Include the following paragraph when floor sealer is required; supplement with additional paragraphs for specific requirements.

C. Apply sealer [as scheduled] on floor surfaces.

***** [OR] *****

Include the following paragraph when retarder is required; supplement with additional paragraphs for specific requirements.

D. Apply retarder to [exposed aggregate] [troweled] finish [as scheduled] on floor surfaces.

3.4 TOLERANCES

A. Section 01400 - Quality Requirements: Tolerances.

There are two distinctly different ways of describing floor flatness and levelness tolerances: By statement of dimensional measurement over straight edge using first three paragraphs, OR by specifying ASTM F-Number, FF and FL system using subsequent paragraphs.

B. Maximum Variation of Surface Flatness For Exposed Concrete Floors: [1/4] [1/8]
[] inch ([6] [3] [] mm) in [10] [] ft ([3] [] m).

C. Maximum Variation of Surface Flatness Under Seamless Resilient Flooring: [1/4] [1/8]
[] inch ([6] [3] [] mm) in [10] [] ft ([3] [] m).

D. Maximum Variation of Surface Flatness Under Carpeting: [1/4] [1/8] [] inch
([6] [3] [] mm) in [10] [] ft ([3] [] m).

***** [OR] *****

This second option uses relative F-Numbers utilizing traveling laser beam measuring method. When "F" number method is utilized, edit subsequent paragraphs accordingly.

- E. Measure for F(F) and F(L) tolerances for floors in accordance with ASTM E1155, within 48 hours after slab installation.
- F. Finish concrete to achieve the following tolerances:
 - 1. Under Glazed Tile on Setting Bed: F(F) [35] [_____] and F(L) [20] [_____].
 - 2. Under [Glossy] Resilient Finishes: F(F) [75] [_____] and F(L) [50] [_____].
 - 3. Exposed to View and Foot Traffic: F(F) [75] [100] [_____] and F(L) [40] [50] [_____].
 - 4. Correct slab surface when actual F(F) or F(L) number for floor installation measures less than required.
- G. Correct defects in defined traffic floor by grinding or removal and replacement of defective Work. Areas requiring corrective Work will be identified. Re-measure corrected areas by same process.

3.5 SCHEDULES

Include schedule when differing floor finishing materials and tolerance criteria are required for the Project.

Consider the following examples when developing Project schedule.

- A. Receiving Dock: Non-metallic hardener, natural mineral type, gray color; surface tolerance of F(F) 75 and F(L) 40.
- B. Storage Area #106: Sealer, clear mineral type, surface flatness tolerance of [1/8] [_____] inch ([3] [_____] mm) in [10] [_____] ft ([3] [_____] m).

END OF SECTION