

**SECTION 03 35 23 Exposed Aggregate Concrete Finishing**  
**SECTION 03 30 00 Cast in Place Concrete**  
**SECTION 32 13 13 Concrete Paving**

**Paragraph Specification:** Please use the below specification language for projects requiring specifications directly on drawings.

- A Surface Retarder: Water based treatment designed to retard the hydration of top layer of concrete paste, producing an exposed aggregate, or sand finish appearance. Product may be used on both horizontal and vertical surfaces
1. Source: Brickform Select-Etch by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
  2. Exposure depth:
    - a. [SE01, White, Light Acid Wash (0.1 mm)]
    - b. [SE03, Violet, Acid Wash (0.2 mm)]
    - c. [SE05, Light Blue, Sandblast (0.5 mm)]
    - d. [SE15, Yellow, 1/32" (0.8 mm)]
    - e. [SE25, Beige, 1/16" (1.5 mm)]
    - f. [SE50, Light Green, 3/32" (2.4 mm)]
    - g. [SE75, Blue, 1/8" (3.2 mm)]
    - h. [SE100, Gray, 5/32" (4 mm)]
    - i. [SE125, Pink, 3/16" (4.5 mm)]
    - j. [SE150, Green, 7/32" (5.5 mm)]
    - k. [SE200, Salmon, 1/4" (6.5 mm)]
    - l. [SE250, Orange, 9/32" (7 mm)]

**SECTION 03 35 23 Exposed Aggregate Concrete Finishing**

**PART I - GENERAL**

1.01 SUMMARY

A Section Includes

1. Finishing materials and methods for producing decorative exposed aggregate slab and wall finish, including the use of chemical surface retarders
2. Curing and sealing of concrete surfaces.

B Related Sections

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections
2. Section 03 30 00 Cast in Place Concrete

[Project]

03 35 23-1

EXPOSED AGGREGATE FINISHING

## 1.02 REFERENCES

- A ASTM International ([www.astm.org](http://www.astm.org))
- B American Concrete Institute ([www.concrete.org](http://www.concrete.org))

## 1.03 ADMINISTRATIVE REQUIREMENTS

- A Pre-Installation Conference:
  - 1. Attendance: [Architect,] [Owner,] [Contractor,] [Construction Manager,] installer, and related trades.
  - 2. Review: Project conditions, manufacturer requirements, delivery, and storage, staging and sequencing, and protection of completed work.

## 1.04 SUBMITTALS

- A Action Submittal
  - 1. Shop Drawings including patterns and exposure depths
  - 2. Product Data: Manufacturer's descriptive data and product attributes for each product.
  - 3. Samples: [Selection samples.] [Verification samples.]
- B Informational Submittal
  - 1. VOC Compliance [if Applicable.]
    - a. Based on SCAQMD Rule 1113 for VOC compliance
      - i. Concrete surface retarder, not to exceed 250 g/l or comply with the low solids exception of less than 80 g/l.
      - ii. Sealers, not to exceed 100 g/l.
    - b. Or CDPH Standard 1.2 VOC Emissions compliant

## 1.05 QUALITY ASSURANCE

- A Installer Qualifications: Minimum [5] [ ] years' experience in work of this Section.
- B Mockups: Minimum [4 x 4] [ ] x [ ] feet. Show each concrete color and finish.
  - 1. Prepare mock-up panel(s) at the project site to demonstrate proficiency of the contractor as well as determine the best procedures and degree of aggregate exposure.
  - 2. Contractor shall use the methods and materials proposed for use on the final installation. Uniformity in appearance of each panel shall be the responsibility of the contractor.
  - 3. Mockups shall be maintained for the duration of the project
- C Review: Project conditions, manufacturer requirements, delivery, and storage, staging and sequencing, and protection of completed work.

[Project]

03 35 23-2

EXPOSED AGGREGATE FINISHING

**PART 2 - PRODUCTS****2.01 MANUFACTURERS**

- A Solomon Colors, Inc.; 4050 Color Plant Rd., Springfield, IL. 62702;
1. Tel: (800) 624--0261; Website: [www.solomoncolors.com](http://www.solomoncolors.com)
  2. Contact: [ArchitecturalTeam@SolomonColors.com](mailto:ArchitecturalTeam@SolomonColors.com)
- B Substitutions: [Refer to Division 01.] [Not permitted.]

**2.02 MATERIALS**

- A Concrete Materials: Specified in Section [03 30 00.] [\_\_ \_\_ \_\_.]
1. Aggregate Considerations: Graded and washed aggregate and sand to achieve consistent appearance.
    - a. Special size/color aggregate to be approved at mockup
    - b. Ratio of sand to aggregate per manufacturer's recommendation to achieve the desired exposure depth and appearance.
    - c. Single Source Cements and Aggregates for batch consistency for the entire project.
- B Colloidal Silica Concrete Surface Treatment: Single component colloidal silica-based admixture for improving surface properties; Reducing efflorescence in colored concrete, improving workability for consistent aggregate exposure, Improving the bond between aggregate and concrete paste for more durable exposed aggregate finishes.
1. Product: Day 1 Surface Technology by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
    - a. Material Type: Water-based, colloidal silica blended surfactant
    - b. VOC Content: < 50 grams per liter.
    - c. VOC Emissions: CDPH Standard 1.2 VOC Emissions certified
- C Fibrous Reinforcement: Cellulose micro-fiber designed to provide secondary reinforcement. Reduces plastic shrinkage cracking and remains invisible on decorative surfaces. Provides superior finishing qualities, while cleanly accepting color and decorative finishes.
1. Product: UltraFiber 500 by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
    - a. Material: Alkali-resistant natural cellulose fibers.
    - b. Meet ASTM A820/A820M, ASTM D7357, and ASTM C1116, Section 4.1.4, Type IV.
    - c. Stability: Exceed ICC-ES requirements of 90 percent average Zero-Span Stability Ratio (ZSSR) after exposure to saturated calcium hydroxide and 1.0N sodium hydroxide, tested to ASTM D6942.
- D Color Pigment: Iron oxide concrete pigment meeting ASTM C979/C979M; light-fast, insoluble, and alkali resistant, in powdered, liquid, or granular form.

[Project]

03 35 23-3

EXPOSED AGGREGATE FINISHING

1. Source: Iron Oxide Pigment or Brickform Powdered Integral Color by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
2. Color: [\_\_\_\_\_] [To be selected from manufacturer's full color range.]

E Surface Retarder: Water based treatment designed to retard the hydration of top layer of concrete paste, producing an exposed aggregate, or sand finish appearance. Product may be used on both horizontal and vertical surfaces

1. Source: Brickform Select-Etch by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
2. Exposure depth: [\_\_\_\_\_]

| Item # | Color       | Agg Exposure    | Exposure Depth           |
|--------|-------------|-----------------|--------------------------|
| SE01   | White       | Light Acid Wash | Light Acid Wash (0.1 mm) |
| SE03   | Violet      | Acid Wash       | Acid Wash (0.2 mm)       |
| SE05   | Light Blue  | Sandblast       | Sandblast (0.5 mm)       |
| SE15   | Yellow      | 1/8" - 1/4"     | 1/32" (0.8 mm)           |
| SE25   | Beige       | 1/8" - 1/4"     | 1/16" (1.5 mm)           |
| SE50   | Light Green | 1/8" - 3/8"     | 3/32" (2.4 mm)           |
| SE75   | Blue        | 1/8" - 3/8"     | 1/8" (3.2 mm)            |
| SE100  | Gray        | 3/8" - 1/2"     | 5/32" (4 mm)             |
| SE125  | Pink        | 3/8" - 5/8"     | 3/16" (4.5 mm)           |
| SE150  | Green       | 3/8" - 5/8"     | 7/32" (5.5 mm)           |
| SE200  | Salmon      | 5/8" - 1"       | 1/4" (6.5 mm)            |
| SE250  | Orange      | 1" - 1 1/2"     | 9/32" (7 mm)             |

F Curing and Sealing: Curing and sealing products to be determined at time of mockup. Some products or methods may not be compatible with project requirements. Considerations include VOC requirements, desired sheen, color enhancement, and environmental conditions. Refer to Solomon Colors' product data for assistance with selecting the proper curing and sealing product(s).

1. Concrete Curing Compound: Clear, film-forming curing/sealing compound, suitable for decorative concrete. Reference ACI 310R
  - a. [Water-based] [Solvent-Based]
  - b. Product: Brickform Gem Cure and Seal by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
2. Concrete Surface Sealer: VOC compliant, clear acrylic or penetrating sealer, designed to reduce porosity of exposed aggregate concrete surface
  - a. Water-Based Acrylic Sealer: Film forming, satin sheen
    - i. Product: Brickform Gem Cure and Seal WB by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)
  - b. Water-Based Penetrating Sealer: Natural look with no sheen and no film
    - i. Product: Brickform Stealth Seal WB by Solomon Colors, Inc. [www.solomoncolors.com](http://www.solomoncolors.com)

[Project]

03 35 23-4

EXPOSED AGGREGATE FINISHING

- c. Solvent-Based Acrylic Sealer: Film Forming, high gloss, color enhancement
  - i. Product: Brickform Gem Seal by Solomon Colors, Inc.  
[www.solomoncolors.com](http://www.solomoncolors.com)
- d. Solvent-Based Hybrid Penetrating Sealer: Low sheen, color enhancement
  - i. Product: Brickform Gem Guard by Solomon Colors, Inc.  
[www.solomoncolors.com](http://www.solomoncolors.com)

**PART 3 - EXECUTION**

**3.01 GENERAL**

- A Apply Materials in accordance with manufacturer's recommendations
- B Methods and materials shall match that of approved mockup production

**3.02 CONCRETE FINISHING**

- A Follow standard practices and reference Section 033000
- B Exposed Aggregate Finishing
  - 1. Do not use tools that may force the aggregate away from the surface creating a non- uniform surface after exposure.
  - 2. Finish slab surface to be uniform, flat, without low spots or ridges. Do not overwork the surface to be exposed.

**3.03 COLLOIDAL SILICA SURFACE TREATMENT INSTALLATION**

- A After screed and immediately before bull float for concrete performance application
  - 1. Spray-apply to concrete surface with uniform coverage
  - 2. Typical Coverage will be appx. 300-500 ft<sup>2</sup>/gallon
- B At time of troweling and/or hand finishing for finishing aid application
  - 1. Spray Apply as needed to facilitate finishing operations and surface lubrication
  - 2. Typical coverage will be 800-1000 ft<sup>2</sup>/gallon
- C Prevent overspray of material to adjacent equipment and construction materials.

**3.04 CONCRETE SURFACE RETARDER INSTALLATION**

- A Protect all adjacent concrete surfaces, pavers, stones, borders, etc. that are not to receive retarder finish prior to concrete placement and retarder application
- B Application
  - 1. Spray the Concrete Surface Retarder with low-pressure sprayer at a rate of 250-300 ft<sup>2</sup>/gallon
  - 2. Maintain an even continuous application.
  - 3. Once dry, Concrete Surface Retarder will yield a coating that provides intermittent rain protection. Protect the surface if heavy extended rains are predicted or during extremely hot weather to retain moisture and protect the etch retention.
- C Removal

[Project]

03 35 23-5

EXPOSED AGGREGATE FINISHING

1. Concrete Surface Retarder can be removed when the underlying concrete has sufficiently hardened, typically ranging from 5 to 12 hours after initial placement.
2. Do not exceed 24 hours before removing
3. Wash surface with running water with a push broom, high pressure washing, or a rotary buffer with bristle attachment and water.
4. Timing and removal should be determined by the project testing and jobsite samples. When using light etches, it is generally better to remove Surface Retarder the same day.
5. Dispose of wash water slurry in accordance with environmental regulations per relevant jurisdictional authority.

### 3.05 CONCRETE CURING and SEALING COMPOUND INSTALLATION

#### A Curing Compound [as determined]

1. After water from removal has dissipated from the slab, apply curing compound uniformly.
2. Follow manufacturer's recommendations for coverage, methods, and environmental allowances.

#### B Sealer [as determined]

1. After recommended cure time has been achieved, apply surface sealer.
2. Follow manufacturer's recommendations for coverage, methods, and environmental allowances.

### 3.06 CONCRETE REPAIR AND PROTECTION

- A Repair and patch defective areas using the same materials as the original concrete. Place, finish, and cure to achieve a blended appearance with adjacent concrete.
- B Remove and replace damaged areas that do not comply with requirements in this section. Replacement areas should be made between joints or other visible termination point.
- C Protect finished concrete from staining, soils, and other foreign material until completion.
- D Follow recommended continuing maintenance procedures.

END OF SECTION

[Project]

03 35 23-6

EXPOSED AGGREGATE FINISHING