

# GET REAL SURFACES

03532 Concrete Floor Topping (bonded)

## PART 1 GENERAL

### 1.1 SUMMARY

A. This section specifies cast-in-place architectural concrete, including formwork, accessories, concrete materials, concrete mix design, placement procedures and finishing.

### 1.2 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 117 Standard Specification for Tolerances for Concrete Construction and Materials
2. ACI 308 Standard Specification for Curing Concrete
3. ACI 503.4 Standard Specification for Repairing Concrete with Epoxy Mortars
4. ACI 302.1R Guide for Concrete Floor and Slab Construction

B. American Society for Testing and Materials (ASTM)

1. ASTM C94 Specification for Ready-Mixed Concrete
2. ASTM C33 Specification for Concrete Aggregates
3. ASTM C150 Specification for Portland Cement
4. ASTM C1315 Specification for Liquid Membrane-Forming Compounds

### 1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data for all materials and manufactured products.

B. Shop Drawings:

1. Submit drawings that indicate the locations of all joints in concrete, including construction joints, expansion joints and contraction joints.
2. Minimum control joint saw cuts shall be at 8'-0" o.c. each way. Isolate cracking at outside corners and columns, etc. with radiating cuts.
3. Submit drawings that indicate concrete placement schedule, method, sequence, location and boundaries.

C. Samples:

1. Submit samples not less than 12"x12" indicating proposed materials and methods. Samples approved by Owner shall be for color and texture only, and shall become control samples.

### 1.4 QUALITY ASSURANCE

121 Washington Street  
Poughkeepsie, NY 12601  
v 845-452-3988  
v 212-414-1620

A. Installer Qualifications: Topping slabs shall be installed and finished by a skilled and experienced installer specializing in the installation and finishing of architectural concrete slabs.

B. Floor tolerance: 'Flat' tolerance conforming to ACI 117, F 30, F 20, true plane maximum variation of 3/16" (4.75mm) in 10 feet (3m) when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

C. Cold Joints: Cold joints in concrete will not be permitted unless planned and treated properly as construction joints and submitted for approval as specified under submittals above.

D. Site Mock-Ups: Provide site mock-up, at least 3 feet x 4 feet in size, of exposed slab finish for review and approval. Provide additional mock-ups, as required, until the desired finish is obtained. Site mock-up requires approval before work may proceed.

E. Finishes:

1. Finishing and finishes of formed concrete surfaces shall conform to applicable requirements of ACI 301.

## 1.5 ENVIRONMENTAL REQUIREMENTS

A. Delivering and placing of concrete in hot weather and cold weather shall conform with applicable requirements of ACI 305R and ACI 306.1.

B. Do not place concrete when the rate of evaporation of surface moisture from concrete exceeds 0.2 pounds per square foot per hour as described in ACI 305R.

C. Maximum ambient temperature for placing concrete shall be 90F/32C. Ambient temperatures in excess of this shall have the mix cooled by appropriate method, such as icing the mixing water. Maintain uniform concrete temperature of succeeding batches placed.

D. When the ambient drops below 35F/2C, or is expected to during placement, the temperature of the mix shall be heated by adding hot water (not exceeding 120F/48C) or by steam heating the aggregates, or both. Other methods of heating aggregates will not be permitted.

E. All concrete shall be protected against freezing for at least 36 hours after placing.

## PART 2 PRODUCTS

### 2.1 TOOL AND EQUIPMENT

A. The Contractor shall furnish all materials, tools, equipment, facilities and services as required for performing the required topping slab placing and finishing work.

### 2.2 ABSORPTION RETARDER

A. Acrylic Mortar Admix by Custom Building Products (800-272-8786).

### 2.3 CONCRETE

A. Concrete shall have a minimum compressive strength at 28 days of 3500psi.

B. Average slab thickness shall be 2" (maximum deviation shall be 1/2").

C. Average density 24lbs per square foot (12 grams per square centimeter).

D. Portland Cement: ASTM C150, Type II, low alkali.

121 Washington Street  
Poughkeepsie, NY 12601  
v 845-452-3988  
v 212-414-1620

E. Aggregates:

1. Aggregates shall be obtained from one source for each type required in order to produce uniform color.
2. Course Aggregates: ASTM C33, clean and uniformly graded, consisting of hard, dense, durable crushed gravel with deleterious material not to exceed 3% by weight.
  - a. Maximum course aggregate size shall be 3/4" for 2" slabs, 1/4"-3/8" for 1-1/2" slabs.
3. Fine Aggregates: ASTM C33, clean and uniformly graded, consisting of sand (light brown or gray) with deleterious material not to exceed 5% by weight.
4. Lightweight Aggregates: ASTM C330, uniformly graded to maximum size.

F. Water: Water for concrete mixes, curing and cleaning shall be clean and potable, free of impurities detrimental to concrete.

2.4 SEALER

A. Type 1, Class A Acrylic Curing and Sealing Compound 'Certi-Vex® AC 1315 – AIM' by Vexcon Chemicals, Inc. (888-839-2661). Or equal

PART 3 EXECUTION

3.1 PREPARATION

- A. Contractor shall inspect site conditions prior to scheduling placement of concrete. Do not place concrete until conditions are in compliance with the requirements of these specifications.
- B. Subfloor: Broom clean surface and remove all obstructions.
  1. Wood
    - a. Subfloor shall be free of gaps, holes and ridges.
    - b. Apply a full strength roller coat of acrylic absorption retarder on unsealed wood.
  2. Concrete
    - a. Slab shall be 'broom finish' or smoother.
    - b. Apply a 50/50 diluted solution of water and acrylic absorption retarder to prevent excessive shrinkage and moisture loss. (or Weld Crete by Larson.)

3.2 PLACING AND FINISHING

- A. Slabs shall be placed and finished monolithically. Strike off and screed slabs to true, plane surfaces at required elevations, and thoroughly compact concrete with vibrators, floats and tampers to force course aggregate below the surfaces.
- B. Concrete shall be handled as rapidly as practicable from the mixer to the place of final deposit by methods that prevent the separation or loss of ingredients. Concrete shall be deposited, as nearly as practicable, in its final horizontal position to avoid redistribution or flowing.
- C. Finishing: Consolidate surface with power-driven floats as soon as topping can support equipment and operator. Restraighten, cut down high spots and fill low spots, in repeated passes until surface is left with a uniform, smooth texture.

121 Washington Street  
Poughkeepsie, NY 12601  
v 845-452-3988  
v 212-414-1620

### 3.3 CONTRACTION JOINTS

- A. Form weakened-plane contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8" wide x 3/8" deep joints into concrete when cutting action will not tear, abrade or otherwise damage surface and before topping develops random contraction cracks (within 48 hours of placement).
- B. Care shall be taken to avoid scratching and damaging surface with footprints or equipment.
- C. Joint layout shall be per approved plan.

### 3.4 SEALING AND POLISHING

A. Apply sealer as soon as possible after the concrete has received final finishing, just as the water sheen disappears. If application is delayed concrete must be kept wet (preferably by water-mist) until sealer can be applied.

1. If concrete is allowed to dry, use Certi-Vex® Concrete Etch & Efflorescence Remover by Vexcon Chemicals, Inc. to clean and prepare the surface.

B. Apply first coat of sealer at a rate of 300-400 sq. ft./gallon (7.5-10 m/L).

1. If applying by sprayer (preferred):

a. Use a low-pressure high solids commercial grade solvent resistant sprayer with neoprene fittings.

b. The sprayer must be clean and dry. Clean sprayer as directed between applications to ensure best results.

c. If spraying and back rolling, spray enough material that a second person can immediately back roll following the spray applicator (follow roll instructions below). DO NOT DELAY THE BACK ROLL as the area will dry quickly.

2. If applying by roller:

a. Use a 1/4" nap mohair roller.

b. Do not overwork material; apply in a single lapping motion. DO NOT ROLL AREA BACK AND FORTH.

c. Do not run roller dry or roll over dry material. To aid in keeping roller wet and fluid, keep a roller pan filled with Certi-Vex® Equipment Cleaner.

3. Material should not be allowed to puddle; broom out or squeegee excess.

4. Do not allow sealed area to become wet with water until dry.

c. Allow first coat to dry thoroughly; apply a second coat of sealer at a rate of 500-600 sq. ft./gal (12.5-15 m/L).

### 3.5 PROTECTION

A. Protect fresh concrete from premature drying and excessive cold or hot temperatures (including excessive air movement, air conditioning and drying winds).

B. Protect exposed concrete slab surfaces as required to prevent damage from impact or stains.