

SECTION 03530

CONCRETE TOPPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete Topping Compound, Standard-Traffic Service.
- B. Concrete Topping Compound, High-Traffic Service.
- C. Products to Apply and Finish Concrete Toppings.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES

- A. ASTM C 109/C 109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).
- B. ASTM C 150 - Standard Specification for Portland Cement.
- C. ASTM C 666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
- D. ASTM C 672 - Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
- E. ASTM C 944 - Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotating-Cutter Method.

1.4 SYSTEM DESCRIPTION

- A. Performance Requirements: Concrete topping; mixed, applied, and cured in accordance with concrete topping compound manufacturer's printed instructions:
 - 1. Concrete Topping, Standard-Traffic Service:
 - a. Compressive strength, when tested in accordance with ASTM C 109; 2-inch cube specimens:
 - 1) 1300 pounds per square inch after 7 days curing time; within two standard deviations.
 - 2) 1800 pounds per square inch after 14 days curing time; within two standard deviations.
 - 3) 2800 pounds per square inch after 28 days curing time; within two standard deviations.

- b. Resistance to rapid freezing and thawing, when tested in accordance with ASTM C 666: Beginning of failure of flat areas after 70 cycles.
 - c. Abrasion resistance, when tested in accordance with ASTM C 944:
 - 1) Maximum 1 gram loss under 2 gram load, with 50 percent flat texture.
 - 2) Maximum 3 grams loss under 6 gram load, with 50 percent flat texture.
2. Concrete Topping Compound, High-Traffic Service:
- a. Compressive strength, when tested in accordance with ASTM C 109; 2-inch cube specimens:
 - 1) 2100 pounds per square inch after 3 days curing time; within two standard deviations.
 - 2) 2900 pounds per square inch after 7 days curing time; within two standard deviations.
 - 3) 4000 pounds per square inch after 28 days curing time; within two standard deviations.
 - b. Resistance to rapid freezing and thawing, when tested in accordance with ASTM C 666: Beginning of failure of flat areas after 110 cycles; no delamination after 300 cycles.
 - c. Resistance of concrete surfaces exposed to de-icing chemicals, when tested in accordance with ASTM C 672: Beginning of failure of flat areas at edges after 45 cycles.
 - d. Abrasion resistance, when tested in accordance with ASTM C 944:
 - 1) Maximum 1 gram loss under 10 kilogram load, with 50 percent flat texture.
 - 2) Maximum 3 grams loss under 20 kilogram load, with 50 percent flat texture.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's descriptive literature for concrete topping compound.
- C. Selection Samples: Two sets of color chips representing concrete topping compound manufacturer's full range of available colors.
- D. Verification Samples: Two samples, minimum size 6 inches square, representing actual color and finish of product to be installed.

- E. Quality Assurance Submittals:
 - 1. Test Reports: Certified reports from independent testing laboratory supporting compliance of concrete topping to specified requirements.
 - 2. Manufacturer's instructions:
 - a. Printed mixing and application instructions for each product.
 - b. Manufacturer's Safety Data Sheets (M.S.D.S.) for each product.

1.6 QUALITY ASSURANCE

- A. Obtain copy of concrete topping compound manufacturer's instructional videotape; ensure that applicator views videotape before beginning construction activities of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection:
 - 1. Store products of this section in manufacturer's unopened packaging until installation.
 - 2. Maintain dry, heated storage area for products of this section until installation of products.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer of Concrete Topping Compound(s): Mortex Manufacturing Company, Inc.; Corporate Headquarters at 1818 West Price Street, Tucson AZ 85705; Telephone 1-800-338-3225, FAX 520-293-8884.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.

2.2 MATERIALS

- A. Concrete Topping Compound, Standard-Traffic Service:
 - 1. Acceptable Product: Keystone Kool Deck.
 - 2. Characteristics: Composed of synthetic iron-oxide pigments and natural organic materials, meeting performance requirements specified in SYSTEM DESCRIPTION Article of this section.

3. Color: Selected from full range of manufacturer's standard colors.
 4. Color: _____.
 5. Color: Specified in SCHEDULES Article of this section.
- B. Concrete Topping Compound, High-Traffic Service:
1. Acceptable Product: Marquee.
 2. Characteristics: Composed of synthetic iron-oxide pigments, Portland cement, limestone, crystalline quartz, and natural organic materials; meeting performance requirements specified in SYSTEM DESCRIPTION Article of this section.
 3. Color: Selected from full range of manufacturer's standard colors.
 4. Color: _____.
 5. Color: Specified in SCHEDULES Article of this section.
- C. Concrete Curing Compound:
1. Acceptable Product: Mor-Cure.
 2. Characteristics: Liquid curing compound supplied by manufacturer of concrete topping compound for use with high-traffic service concrete topping compound; water-soluble, self-dissipating.
- D. Portland Cement: ASTM C 150, Type I; white color.
- E. Sand: Ground marble composition, passing size number 20 sieve.
- F. Water: Clean, potable; containing no contaminants which would impair appearance or performance of products in this section.
- G. Bonding System:
1. Acceptable Product: Mortex PTA System.
 2. Characteristics: Materials for bonding concrete topping mix to existing concrete substrates supplied by manufacturer of concrete topping compound.

2.3 MIXES

- A. Proportion concrete topping materials in accordance with concrete topping compound manufacturer's instructions; addition of materials other than those specified therein is not permitted.
- B. For application at temperatures below 45 degrees F, use hot water in concrete topping mix; for application at

temperatures above 90 degrees F, or application under windy conditions, use ice water in concrete topping mix.

- C. Mix concrete topping materials in paddle-type plaster mixer in accordance with procedures specified in concrete topping compound manufacturer's instructions; add materials in specified order, maintaining specified mixing periods.
- D. Test concrete topping mix prior to application, using viscosity cup supplied by concrete topping compound manufacturer; adjust mix, if required, to specified consistency in accordance with concrete topping compound manufacturer's instructions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Test concrete substrate for correct condition of substrate for application of concrete topping.

3.2 PREPARATION

- A. Protection of Adjacent Surfaces: Mask off adjacent surfaces to protect from corrosion by concrete topping mix.
- B. Surface Preparation: Scarify concrete substrates to receive concrete topping, using nylon-bristle push broom immediately before application of concrete topping; scarify with single broom pass only, to avoid sweeping loose sand to surface of concrete substrate.
- C. Surface Preparation: Prepare existing concrete substrates to receive concrete topping, using specified bonding system in accordance with manufacturer's instructions.

3.3 APPLICATION

- A. Installation of concrete substrate is specified in Section 03300.
- B. Apply concrete topping mix to concrete substrate when substrate surface shows water rise, but no deep depression, when walked on.

- C. Apply concrete topping mix in two applications in accordance with concrete topping compound manufacturer's instructions, using one of the following:
 - 1. Brush, supplied by concrete topping compound manufacturer.
 - 2. Sprayer, type recommended by concrete topping compound manufacturer.
 - 3. Stucco texture machine.
- D. Maintain coverage of 300 square feet per unit of concrete topping compound mixed.
- E. Trowel concrete topping mix, using trowel supplied by concrete topping compound manufacturer; perform trowelling in accordance with concrete topping compound manufacturer's instructions to achieve specified pattern, color uniformity, and levelness.
- F. Nominal thickness of concrete topping application: 1/8 inch.
- G. Apply specified concrete curing compound to finished high-traffic service concrete topping surfaces, using construction sprayer; ensure complete uniform coverage of surfaces.

3.4 CLEANING

- A. Remove masking from adjacent surfaces.

3.5 PROTECTION OF INSTALLED PRODUCTS

- A. Protect finished concrete topping surfaces during initial 72 hours of curing from frost and other inclement weather in accordance with concrete topping compound manufacturer's instructions.
- B. Protect finished concrete topping surfaces during initial 12 hours of curing from rain by covering surfaces if rain is predicted; if covering surfaces with plastic film, remove film as soon as probability of rain, or initial 12 hour period, has ended to prevent non-uniform curing of concrete topping.
- C. Allow no traffic on concrete topping for a period of 48 hours after completing trowelling.

- D. Allow only light foot traffic on concrete topping for a period of 14 days after initial 48 hour curing period.
- E. Using locations where concrete topping has been applied for storing or placing waste containers, storage containers, or construction materials is not permitted.

3.6 SCHEDULES

- A. Pool Area: Standard-traffic service concrete topping;
_____ color.
- B. Patio Area: High-traffic service concrete topping;
_____ color.
- C. Walkways: High-traffic service concrete topping;
_____ color.

END OF SECTION