

009-06-29-2016

**PROJECT DESCRIPTION:** Plaza slab replacement with integrally-stained concrete and surface-seeded aggregate concrete

**APPROXIMATE PROJECT COST:** [REDACTED]

**SCOPE OF WORK:**

- Supply and install approximately 32,000 square feet of a new 3" thick integrally-colored concrete topping slab with sandblasted non-slip finish. Please refer to "Project Specifications."
- Supply and install approximately 5,000 square feet of surface-seeded aggregate concrete with sandblasted non-slip finish. Portions of the new slab will have a specialty concrete finish as shown in the architectural drawings. Please refer to "Project Specifications."
- Topping slab color, texture/finish, and joint layout to match the architectural drawings. Please refer to "Project Specifications."
- Provide a survey of the existing plaza to determine existing finished floor elevations, finish floor elevation, and slope of new plaza slab to match existing elevations.
- Seal the new topping slab per the architectural drawings and specifications.
- Responsible for all site preparation (i.e., safety precautions, barricades, cones, site cleaning, materials organization and staging, etc).
- Responsible for coordination, scheduling, and delivery of materials.

**TIMELINE:**

- Project to commence no earlier than July 30, 2016 and end no later than September 1, 2016. The timeline must include time for placement, curing, finishing, and sealing of concrete topping slab (i.e., ready for pedestrian foot traffic).
- Must submit a schedule of anticipated work days to VP of Operations for approval and must account for events as follows:
  - Event Days – crews allowed onsite from 7am – 3pm when the event occurs in the evening
  - Crews will not be allowed onsite when an event occurs in the morning and/or afternoon (e.g., Disney on Ice matinees and school shows)
  - Non-Event Days – crews allowed onsite for extended hours as needed

**WARRANTY:**

- Must be able to provide a 1-year warranty on all materials and labor.

**RESTRICTIONS AND QUALIFICATIONS:**

- Must have demonstrated experience with a minimum of three (3) similar decorative concrete paving projects within the last five (5) years.
- Representative projects must include a minimum of 35,000 square feet of architectural concrete paving with integral concrete coloring and specialty exposed/seeded aggregate finish.
- Reference list of projects shall include a contact name and phone number for project's architect and owner's representative.

**INSURANCE:**

- Shall purchase and maintain during the entire project and for two years after project completion insurance with the minimum limits and coverage shown below from insurance companies acceptable to Basketball Properties, Ltd. ("BPL"). BPL has the right to reject unacceptable insurance carriers.

<b>STANDARD INSURANCE REQUIREMENTS</b>	
<b>Coverage Type</b>	<b>Limits</b>
General Liability	\$1,000,000 Per Occurrence; \$2,000,000 General Aggregate; \$2,000,000 Completed Operations Aggregate
Auto Liability (All Hired Non-Owned)	\$1,000,000 for all jobs
Worker's Compensation	Statutory Limits; \$1,000,000 Employers Liability

# DECORATIVE ARCHITECTURAL CONCRETE

## PROJECT SPECIFICATIONS

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to furnish and install decorative architectural concrete paving, including surface-seeded aggregate processes as indicated on Drawings and as specified herein.

#### 1.2 APPLICABLE STANDARDS

- A. Specifications and recommended practices of American Concrete Institute (ACI), American Society for Testing and Materials (ASTM), and the International Building Code.
- B. Design and Control of Concrete Mixtures – Fourteenth Edition; Portland Cement Association.

#### 1.3 QUALITY CONTROL

- A. Quality control to be maintained by approved installers throughout duration of project.
- B. Supervision: On site superintendent must have a minimum of 5 years' experience installing decorative architectural concrete paving, including surface-seeded aggregates.
- C. Slip Resistance: provide a finish with a slip resistance of equal or greater than 0.65 when tested by the  in accordance with ASTM F 489.

#### 1.4 SITE INSPECTION

- A. Verify conditions at site that affect work of this Section.
- B. Take field measurements as required.
- C. Report major discrepancies between Drawings and field dimensions to  Authorized Representative prior to commencing work.

#### 1.5 SUBMITTALS

- A. Product Data: For all products specified in this section.
- B. Shop Drawings:
  - 1. Paving Jointing and Pour Sequence Plan - submit scaled plan drawings indicating the following:
    - a. Proposed layout of contraction, construction and isolation joints. Clearly delineate the three different joint types.
    - b. Layout of paving types as indicated on Drawings. Give overall dimensions of each paving type.
    - c. Concrete pour sequence: indicate sequence of paving pour installation.
- C. Statement of Mix Design: Submit (1) copy of Statement of Mix Design prepared by batch plant servicing Project for each load delivered to Project. Statement of Mix Design to contain following information:
  - 1. Name, address, and telephone number of batch plant preparing
  - 2. Date of mix design.
  - 3. Project location.
  - 4. Vendor requesting load delivery.
  - 5. Mix design number.
  - 6. Integral color used.
  - 7. Gradations for sand and aggregate.
  - 8. Material weights, specific gravity, and absolute volumes.
  - 9. Water/cement ratio.
  - 10. 28-day compressive strength.

## DECORATIVE ARCHITECTURAL CONCRETE

11. Signature of testing laboratory manager.
  12. Signed stamp from registered Project structural engineer or architect.
- D. Surface-Seeded Aggregate (extra stock):
1. One 1-pound sample of each aggregate specified.
  2. One 100-pound sealed bag of each aggregate specified for use by [REDACTED] in future repairs of damaged surface-seeded aggregate concrete paving.
- E. Washed Concrete Sand (extra stock):
1. One 50-pound sealed bag of washed concrete sand similar to type used during installation of decorative concrete paving.

### 1.6 SUBSTITUTIONS

- A. None allowed unless approved in writing by [REDACTED] Authorized Representative.

### 1.7 TESTING

- A. A testing agency may be designated by [REDACTED] Authorized Representative. Testing personnel to meet ASTM E329 requirements.

### 1.8 MOCK-UPS

- A. Prior to installation, provide (1) 4-foot x 4-foot sample of each paving type specified on Drawings to Arena representative and (1) 12-inch x 12-inch sample to Architect.
- B. Ensure that each mock-up contains joint types specified on project, i.e. construction, contraction, and isolation.
- C. Locate mock-ups in a conveniently accessible and protected place. Approved mock-ups will be standard for future paving installation review.
- D. Remove mock-ups from site upon completion of Work and approval by [REDACTED] Authorized Representative.

### 1.9 PROJECT CONDITIONS

- A. Keep Work area clean, and in a safe and workmanlike condition so that rubbish, waste and debris do not interfere with work of other trades.

### 1.10 PRODUCT HANDLING

- A. Store materials in a dry and protected location.
- B. Keep specialty aggregate dry at all times prior to installation.

### 1.11 COORDINATION

- A. Notify [REDACTED] Authorized Representative work in ample time, so as to allow sufficient time for them to perform their portion of work.

## PART 2 - PRODUCTS

### 2.1 PORTLAND CEMENT

- A. Type I or II cement, to conform to ASTM C150.
- B. Use same brand of cement from single source throughout entire project.

### 2.2 WASHED CONCRETE SAND

- A. Clean, hard, and durable washed concrete sand, conforming to ASTM C33.
- B. Use same sand from single source throughout entire project.

### 2.3 AGGREGATE

- A. Clean, hard, and durable coarse aggregate, conforming to ASTM C33.
- B. Use same aggregate from single source throughout entire project.
- C. Maximum aggregate size equals 3/8".

## **DECORATIVE ARCHITECTURAL CONCRETE**

### **2.4 SURFACE-SEEDED AGGREGATE (JEWELKRETE)**

- A. Refer to Drawings for specified surface-seeded aggregate type, size, color, and distribution percentage.
  - 1. JEWELKRETE "Gray Matrix" Basis of Design:
    - a. 34% China White
    - b. 33% One-sided Mirror
    - c. 33% Texas Black
- B. Use surface-seeded aggregate from same source for each paving type specified throughout entire project.

### **2.5 WATER**

- A. Free from deleterious materials such as oils, acids, and organic matter.

### **2.6 ADMIXTURES**

- A. Integral Concrete Coloring Admixture: Refer to Drawings for color type and manufacturer.
  - 1. Acceptable Manufacturers:
    - a. Davis Colors (a Huntsman Company)
      - i. Integrally Stained Concrete, Color: Graphite (8084)
      - ii. Integrally Stained Concrete, Color: Outback (677)
- B. Air Entrainment Admixtures: Conforming to ASTM C260.
  - 1. Acceptable Manufacturers:
    - a. Grace Construction Products
    - b. Master Builders, Inc
- C. Water Reducing Admixtures: Conforming to ASTM C494, Type A.
  - 1. Acceptable Manufacturers:
    - a. Grace Construction Products
    - b. Master Builders, Inc.
- D. Shrinkage Reducing Admixtures: Conforming to ASTM C157.
  - 1. Acceptable Manufacturers:
    - a. Grace Construction Products.

### **2.7 READY MIXED CONCRETE**

- A. Batched, mixed and transported in accordance with ASTM C94 - "Specifications for Ready Mixed Concrete."

### **2.8 REINFORCING**

- A. Polypropylene Fiber Reinforcement: 100% virgin multifilament polypropylene fibers, complying with ASTM C 1116 - Type III.
  - 1. Acceptable Manufacturers:
    - a. Fibermesh; Fibermix Stealth, 1/4" long
    - b. Grace Construction Products; MicroFiber
  - 2. Application Rate: 4 lb./cy of mix. or as recommended by manufacturer.

### **2.9 ISOLATION JOINT MATERIALS**

- A. Refer to Joint Sealant section.

### **2.10 FLY ASH**

- A. ASTM C618 - Type F.

## **PART 3 - EXECUTION**

### **3.1 SUBGRADE**

- A. Screed sand to a smooth plane. Vendor to determine required sand thickness to provide plaza elevation and slope indicated on drawings.
- B. Keep sand damp prior to placing concrete.

## DECORATIVE ARCHITECTURAL CONCRETE

### 3.2 FORMING

- A. Vendor is responsible for design and engineering of form work as well as its construction.
- B. Ensure that Work conforms to recommended practice for concrete form work (ACI 347), latest edition.
- C. Perform form layout with a digital electronic transit for line layout accuracy.
- D. Allow forms to remain in place long enough to allow concrete to set properly. Remove forms when appropriate.

### 3.3 DESIGN OF MIXES AND PROPORTIONING

- A. Proportion and mix of cement, aggregate, admixture and water to attain required plasticity and strength in accordance with current edition of ACI Manual of Concrete Practice and PCA "Design and Control of Concrete Mixtures."
- B. Concrete mixtures to be designed by an approved commercial testing laboratory, using approved materials to obtain specified minimum compressive strength.
- C. Concrete Mix Criteria:
  - 1. Slump: 5 inch, with a 1/2-inch slump differential between successive batches. Obtain approval from [REDACTED] Authorized Representative if slump is outside these parameters.
  - 2. Minimum compressive strength at 28 days: 3,000 psi.
  - 3. Water/cement ratio: 0.5.
  - 4. Sand: 70% of total mix.
  - 5. Pea gravel: 30% of total mix.
  - 6. Admixtures:
    - a. Air entrainment: Do not exceed 2%.
    - b. Shrinkage Reducing: Do not exceed 2% by weight of cement.
  - 7. Non-Chloride Accelerators: Do not use corrosive accelerators such as calcium chloride.
  - 8. Concrete Delivery: Use of concrete loads exceeding 90 minutes from time of batch plant must be approved by [REDACTED] Authorized Representative.
  - 9. Ensure that batch plant guarantees single source supply for cement, sand, and aggregate for the entire project.

### 3.4 JOINTING

- A. Refer to ACI 302 "Guide for Concrete Floor and Slab Construction" for work under this section.
- B. Construction and Contraction Joints:
  - 1. Sawcut construction and contraction joints in locations indicated on Drawings.
  - 2. Perform jointing with a new diamond tip circular saw.
  - 3. Joint Width: Per Drawings.
  - 4. Depth of sawcuts: Per Drawings.
  - 5. Sawcut joints in a straight line with no overcutting.
  - 6. Use a hand tool to sawcut up to vertical edges such as walls, steps, curbs and columns. No cutting into vertical surfaces will be allowed.
- C. Isolation Joint Caulking:
  - 1. Refer to Joint Sealant section.

### 3.5 CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Cure concrete according to ACI 308.1, or by moisture curing:
  - 1. Keep surfaces continuously moist for not less than seven days.

### 3.6 SEALING

- A. Integrally colored concrete:

## DECORATIVE ARCHITECTURAL CONCRETE

1. Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
    - a. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
    - b. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.
  2. Uniformly apply a continuous sealing coat of sealing and curing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.
- B. Surface-seeded aggregate concrete:
1. Uniformly seal surface of surface-seeded aggregate concrete using manufacturer's recommended clear sealer.

## JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples: For each kind and color of joint sealant required.

#### 1.2 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Sample warranties.

#### 1.3 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  1. Warranty Period: Two years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 COLOR

- A. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

#### 2.2 IMMERSIBLE JOINT SEALANTS

- A. Immersible Joint Sealants. Suitable for immersion in liquids; ASTM C 1247, Class 1 or Class 2; tested in deionized water unless otherwise indicated
- B. Urethane, Immersible, S, NS, 35, T, NT, I: Immersible, single-component, nonsag, plus 35 percent and minus 35 percent movement capability, traffic and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 35, Uses T, NT, and I.
  1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Sika Corporation U.S. Sika Corporation U.S.; Sikaflex 1a.

#### 2.3 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Construction Chemicals, LLC, Building Systems
    - b. Construction Foam Products, a division of Nomaco, Inc

## DECORATIVE ARCHITECTURAL CONCRETE

### 2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove laitance and form-release agents from concrete.
  - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

### 3.2 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.