

# Section 3330 ActaCrete™ Architectural Concrete Paving

## Notes:

1) A specifier is within his rights to issue a proprietary specification that names only one brand. If in the informed and professional judgment of the specifier, his client's needs will be best served by naming a particular brand, then he has the responsibility to limit his specification to one source. This practice is even acceptable on publicly funded projects. This principle of proprietary specification has found legal support in the case of Whitten Corp. v. Paddock Pool Builders, Inc., a Federal District Court case from Massachusetts (376 F. Supp. 125). Further support came in 1975 when the U.S. Supreme Court rejected further appeal and review.

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

### 1.2 SUMMARY

- A. This Section specifies ActaCrete™ a textured architectural concrete paving system, cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections include the following:
  - 1. Division 2 "Base Course"
  - 2. Division 3 "Adjacent Concrete Paving"
  - 3. Division 7 "Concrete Paving Joint Sealants"

### 1.3 DESCRIPTION

- A. Furnish materials, labor, transportation, services, and equipment necessary to furnish and install ActaCrete™ textured architectural concrete paving system as indicated on Drawings, Samples and as specified herein.

ActaCrete™ Concrete Includes:

- 1. Concrete
- 2. Integral Color
- 3. Placement and finishing of Concrete
- 4. Surface treatment
- 5. (Optional) Reactive Stain
- 6. (Optional) Con Color Stain
- 7. Equipment necessary to finish and install the ActaCrete™.
- 8. Sealer

#### 1.4 QUALIFICATIONS.

- A. **ActaCrete™** must be performed by a licensed ActaCrete™ installer only. Licensed Installer Progressive Concrete Works Inc. at (623) 582-2274 and ask for Mike Riggs or email [mike@progressiveconcrete.com](mailto:mike@progressiveconcrete.com) .
- B. Qualified Contractor must have installed a minimum of 50,000 S.F. of ActaCrete™ within a 200 mile radius of the project.
- C. Engage experienced personnel who have completed installations using this application, material, design, and extent to that indicated for this Project, of which one will serve as Lead Mechanic.
- D. Submit resumes of Lead Mechanic and two installers/finishers that will be performing the installation.
- E. Single Source Responsibility: Obtain each color, type, and variety of materials from a single source with resources to provide products and materials of consistent quality in appearance and physical properties without delaying work.
- F. Provide 2 photos of each project listed above representing the project/installation.
- G. Concrete contractor to have been in business 15 years or more. Provide three (3) references with phone numbers.

#### 1.5 SUBMITTALS.

- A. Shop Drawings:
  - 1. Submit shop drawings for reinforcing steel and accessories in accordance with ACI standards
  - 2. Paving Jointing and Pour Sequence Plan - submit six blueprints 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 Drawing Paving Schedule. Give overall dimensions of each paving type.
    - c. Concrete pour sequence. Indicated sequence of paving pour installation.
- B. 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 statement of mix design.
  - 2. Date of mix design.
  - 3. Project location.
  - 4. Contractor 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. PSI rating.
11. Signature of testing laboratory manager.
12. Signed stamp from registered Project structural engineer or architect.

1.6 Substitutions: none allowed unless approved in writing by owners authorized representative. Substitutions must be submitted 10 working days prior to bid date.

1.7 A testing agency may be designated by Owner or Owner's Authorized Representative. Testing personnel to meet ASTM E329 requirements.

#### 1.8 MOCK-UPS

- A. Prior to construction, provide (1) 4-foot x 4-foot x 4-inch sample of each ActaCrete™ paving type specified on Drawings.
- 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 ActaCrete™ paving installation review.
- D. Remove mock-ups from site upon completion of Work and approval by Owner's 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.

### PART 2 PRODUCTS

#### 2.1 PORTLAND CEMENT

- A. Type II, IIA, cements, to conform to ASTM C150.
- B. Use same brand of cement from single source throughout entire project.
- C. A minimum of 20% Type F Flyash shall be used in all concrete mix designs to reduce ASR.

#### 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 COARSE AGGREGATE

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

#### 2.4 WATER

- A. Shall be fresh, clean and potable.

#### 2.5 ADMIXTURES

- A. Integral Concrete Coloring Admixture: Refer to Drawings for color type and manufacturer.

Acceptable Manufacturers:

- a. L.M. Scofield
- b. Davis
- d. Solomon
- c. QC

B. Air Entrainment Admixtures: None unless concrete is exposed to freeze thaw cycles.

C. Water Reducing Admixtures: Conforming to ASTM C494, Type A.

Acceptable Manufacturers:

- a. Grace Construction Products; WRDA<sup>®</sup>
- b. Master Builders, Inc.; Micro-Air<sup>®</sup>

D. (Optional) Shrinkage Reducing Admixtures: Conforming to ASTM C157.

Acceptable Manufacturers:

- a. Grace Construction Products; Eclipse<sup>®</sup> Note - Eclipse<sup>®</sup> Shrinkage Reducing Admixture is a liquid admixture which dramatically reduces concrete shrinkage and curling due to drying.

## 2.6 READY MIXED CONCRETE

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

## 2.7 REINFORCING

A. (Optional) Reinforcing Steel: As detailed on the drawings and specified in 03 20 00

B. Polypropylene Fiber Reinforcement: 100% virgin multifilament polypropylene fibers, complying with ASTM C 1116 - Type III.

Acceptable Manufacturers:

- a. Fibermesh; Fibermix Stealth<sup>®</sup> – 1/4" long
  - b. Grace Construction Products; MicroFiber<sup>™</sup>
  - c. Nycon Inc. Fiber
2. Application Rate: 1/2 lb./cy of mix.

## 2.8 ISOLATION JOINT MATERIALS

A. Refer to Section 07900 – Joint Sealers for isolation joint construction.

## 2.9 CONSTRUCTION JOINT DOWELS

A. PNA Diamond Dowels 4¼" square x ¼" thick. Encase 50 percent of each dowel in a plastic sleeve to allow lateral movement of each dowel.

B. 1/2-inch-diameter Rebar, free of dirt, grease, and oils. Encase 50 percent of each dowel in a Speed Dowel<sup>™</sup> plastic sleeve to allow parallel lateral movement of each dowel.

## PART 3 EXECUTION

### 3.1 SUBGRADE

A. Subgrade to meet requirements of project's soils report.

- B. Ensure that a minimum 2-inch layer of graded washed concrete sand or ABC compacted to 95 percent relative compaction is placed over subgrade prior to placing concrete.
- C. Screed to a smooth plane.
- D. Ensure that utilities, including irrigation lines are buried and compacted below bottom of Sand/ABC layer.
- E. Keep subgrade damp prior to placing concrete.

### 3.2 FORMING

- A. Ensure that Work conforms to recommended practice for concrete form work (ACI 347), latest edition.
- B. Do not exceed 20-feet by 20-feet in a formed construction area.
- C. Ensure that form lumber is new #2 or better grade wood. Do not use used form lumber.
- D. Perform form layout with transit for line layout accuracy.
- E. 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.

#### Concrete Mix Criteria:

1. Slump: 5-inch maximum with a 1/2-inch slump differential between successive batches. Obtain approval from Owner's Authorized Representative if slump is outside these parameters.
2. Minimum PSI rating at 28 days: 3,000.
3. Water/cement ratio: Max 0.67.
4. Admixtures:
5. Air entrainment: Do not exceed 2%.
6. Shrinkage Reducing: Do not exceed 2% by weight of cement.
7. Fly ash: 20% minimum
8. Non-Chloride Accelerators: Do not use corrosive accelerators such as calcium chloride.
9. Concrete Delivery: Use of concrete loads exceeding 90 minutes from time of batch plant must be approved by Owner's Authorized Representative.
10. Ensure that batch plant guarantees single source supply for cement, sand, and aggregate for the entire project.

### 3.4 ActaCrete™ Textured Concrete Installation

1. **ActaCrete™** must be performed by a licensed ActaCrete™ installer only.

2. Contact ActaCrete™ Installer Progressive Concrete Works Inc. at (623) 582-2274 and ask for Mike Riggs or email [mike@progressiveconcrete.com](mailto:mike@progressiveconcrete.com) .

ActaCrete™ process incorporates use of following products:

1. ActaCrete™ surface treatment
2. (Optional) Patene Aritectura Stain
3. (Optional) Con Color Stain
4. Equipment necessary to finish and install the ActaCrete™.
5. ActaCrete™ paving sealer.

### 3.5 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. Do not exceed 3/16-inch in width.
  4. Depth of sawcuts: 1/4th depth of slab.
  5. Decorative Sawcut Joints: Per Drawings.
  6. Sawcut joints in a straight line with no overcutting.
  7. 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. Install isolation joint caulking to be installed under Section 07900 – Joint Sealers.

### 3.6 SEALING

- A. Seal surface of paving using ActaCrete™ paving sealer.
- B. Follow ActaCrete™ sealer directions when applying this product.

END OF SECTION