



LITHOCRETE® ARCHITECTURAL CONCRETE PAVING

PART 1 GENERAL

1.1 GENERAL CONDITIONS

- A. Requirements of "General Conditions of the Contract" and of Division 1, "General Requirements," apply to work in this Section with same force and effect as though repeated in full herein.

1.2 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to furnish and install Lithocrete® architectural concrete paving incorporating the patented Lithocrete® process as indicated on Drawings and as specified herein.
- B. Work included in this Section:
1. Installation of architectural concrete paving called Lithocrete® under U.S. Patents (#4,748,788, #6,033,146, #6,016,635 and U.S. Trademark #1,873,329).
- C. Work related in other Sections:
1. Section 02750 - Portland Cement Concrete Paving: Adjacent concrete paving.
 2. Section 02810 - Irrigation System: Coordination of irrigation sleeve installation.
 3. Section 02900 - Landscape Planting: Coordination of plant material placement.
 4. Section 07900 – Joint Sealers: Installation of caulking.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. Federal, State and local laws and regulations governing this work are hereby incorporated into and made part of this Section. When this Section calls for certain materials, workmanship, or a level of construction that exceeds the level of Federal, State, or local requirements, provisions of this Section take precedence.

1.4 APPLICABLE STANDARDS

- A. Specifications and recommended practices of American Concrete Institute (ACI), American Society for Testing and Materials (ASTM), The Uniform Building Code, and U.S. Patent's #4,748,788, #6,033,146, #6,016,635 and U.S. Trademark #1,873,329). Referred to in this Specification with their individual designations are to be considered part of this Specification.
- B. Design and Control of Concrete Mixtures – Thirteenth Edition; Portland Cement Association.

1.5 QUALITY CONTROL

- A. Quality control to be maintained by licensed installers of Lithocrete® throughout duration of project.
Approved contractor: Progressive Hardscapes, 623-582-2274 mike@progressivehardscapes.com
- B. Paving Subcontractor Qualifications: provide evidence to indicate successful experience in providing Lithocrete® similar to that specified herein and demonstrate successful experience.



- C. Demonstration of experience: provide a minimum of 3 projects within a 250 mile radius of the project site. A reference list of each of these three projects containing job address, phone number of project architect, contractor and/or owner along with 8 1/2" x 11" photos of the project. One close up to show detail and one from a distance showing the overall project. Contractor shall have installed a minimum of 35,000 SF of Lithocrete® architectural pavement.
- D. Supervision: On site superintendent must have a minimum of 5 years experience installing Lithocrete®.
- E. Slip Resistance: provide a finish with a slip resistance of equal or greater than 0.65 when tested by the owner in accordance with ASTM F 489

1.6 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 Owner's Authorized Representative prior to commencing work.

1.7 SUBMITTALS

- A. Product Data: Submit no later than 10 days after contract award a typed list of products specified in this Section.
- B. Shop Drawings:
Paving Jointing - If not clearly delineated on the construction drawings.
Submit six blueprints indicating the following:
 - a. Proposed layout of contraction, construction and isolation joints.
 - b. Layout of paving types as indicated on Drawing Paving Schedule.
- 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 concrete supplier preparing statement of mix design.
 - 2. Date of mix design.
 - 3. Project location.
 - 4. Contractor requesting load delivery.
 - 5. Mix design number.
 - 6. Gradations for sand and aggregate.
 - 7. Material weights, specific gravity, and absolute volumes.
 - 8. Water/cement ratio.
 - 9. PSI rating.
 - 10. Signature of testing laboratory manager.
- D. Lithocrete® Surface-Seeded Aggregate (extra stock):
 - 1. One 1-pound sample of each Lithocrete® aggregate specified.
 - 2. One 100-pound sealed bag of each Lithocrete® aggregate specified for use by Owner in future repairs of damaged Lithocrete® concrete paving.

1.8 SUBSTITUTIONS

- A. None allowed unless approved in writing by Owner's Authorized Representative.



1.9 TESTING

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

1.10 MOCK-UPS

- A. Prior to construction, provide (1) 4-foot x 4-foot x 2" or 4" thick sample of each Lithocrete[®] paving type specified on drawings.
- B. Locate mock-ups in a conveniently accessible and protected place. Approved mock-ups will be standard for future Lithocrete[®] installation review.
- C. Remove mock-ups from site upon completion of work and approval by Owner's Authorized Representative.

1.11 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.

1.12 PRODUCT HANDLING

- A. Store materials in a dry and protected location. Protect reinforcing steel and dowels from rusting, deformation, staining, and moisture damage.
- B. Keep Lithocrete[®] aggregate dry at all times prior to installation.

1.13 COORDINATION

- A. Notify Owner's Authorized Representative and contractors performing work related to installation of Contractor's 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, IA, II, IIA, III, IIIA, IV, and V cements, to conform to ASTM C150.
- B. Use same brand of cement from single source throughout entire project.
- C. Refer to drawings for cement type specified.

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 COURSE AGGREGATE



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

2.4 LITHOCRETE[®] SURFACE-SEEDED AGGREGATE

- A. Refer to Drawings for specified Lithocrete[®] surface-seeded aggregate type, size, color, and distribution percentage.
- B. Use same Lithocrete[®] 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. L.M. Scofield; (800) 800-9900
 - b. Colorfull by Admixtures, Inc.; (626) 357-3263
 - c. Davis Colors; (800) 356-4848
- B. Air Entrainment Admixtures: Conforming to ASTM C260. (Not needed in non freeze thaw areas)
 - 1. Acceptable Manufacturers:
 - a. Grace Construction Products; (800) 433-0020
 - b. Master Builders, Inc. (800) 628-9990
- C. Water Reducing Admixtures: Conforming to ASTM C494, Type A.
 - 1. Acceptable Manufacturers:
 - a. Grace Construction Products; (800) 433-0020
 - b. Master Builders, Inc; (800) 628-9990
- D. Shrinkage Reducing Admixtures: Conforming to ASTM C157.
 - 1. Acceptable Manufacturers:
 - a. Grace Construction Products; Eclipse[®] (800) 433-0020

2.7 READY MIXED CONCRETE

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

2.8 REINFORCING

- A. Reinforcing Steel: Conforming to ASTM A615, clean and free of rust, dirt, grease or oils.
- B. Tie Wire: 16-gauge plain cold-drawn steel conforming to ASTM A82, clean, and free of rust, dirt, grease or oils.
- C. Supports for Reinforcement:
 - 1. Provide supports for reinforcement including adobes, bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars in place.



- D. 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 (423)892-8080
 - b. Grace Construction Products; MicroFiber[™] (800)433-0020
 - 2. Application Rate: 1/2 lb. per cy of mix.

2.9 ISOLATION JOINT MATERIALS

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

2.10 CONSTRUCTION JOINT DOWELS

- A. Construct Diamond Dowel Construction joints at modules not larger than 12’-0” x 12’-0”.
- B. Diamond Dowels shall be spaced at 24”o.c.
- C. Encase 50 percent of each diamond dowel in a plastic sleeve to allow parallel lateral movement.

2.11 FLY ASH

- A. ASTM C618 - Type F.

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 ABC is placed over subgrade prior to placing concrete.
- C. Screed ABC to a smooth plane.
- D. Ensure that utilities, including irrigation lines are buried and compacted below bottom of ABC layer.
- E. Keep ABC damp prior to placing concrete.

3.2 FORMING

- A. Be 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. Do not exceed 20-feet by 20-feet in a formed construction area.
- 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 Owner's Authorized Representative if slump is outside these parameters.
 - 2. Minimum PSI Rating at 28 days: 3,000.
 - 3. Cement quantity per yard of mix:
 - a. Minimum: 5 sack.
 - b. Maximum: 7 sack.
 - 4. Water/cement ratio: 0.52 – 0.67.
 - 5. Fly ash: Minimum fly ash content of 18% is required. Do not use non fly ash concrete mixes.
 - 6. Non-Chloride Accelerators: Do not use corrosive accelerators such as calcium chloride.
 - 7. Concrete Delivery: Use of concrete loads exceeding 90 minutes from time of batch plant must be approved by Owner's Authorized Representative.
 - 8. Ensure that batch plant guarantees single source supply for cement, sand, and aggregate for the entire project.

3.4 LITHOCRETE® SURFACE-SEEDED AGGREGATE INSTALLATION

- 1. Lithocrete® is a patented paving process. Installation of Lithocrete® surface-seeded aggregate must be performed by a licensed Lithocrete® installer only.
- 2. Use a licensed Lithocrete® installer in project area.
Approved installer Progressive Hardscapes, 623-582-2274 mike@progressivehardscapes.com
- 3. Lithocrete® is installed in accordance with U.S. Patents . #4,748,788, #6,033,146, #6,016,635 and U.S. Trademark #1,873,329).
- 4. Lithocrete® process incorporates use of following patented products:
 - a. Lithocrete Conditioner™.
 - b. Lithocrete Etch Retarder®.
 - c. Lithoseal™ 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 1/4-inch in width.
 - 4. Depth of sawcuts:
 - a. 1/4" of the depth of slab.
 - b. Decorative Sawcut Joints: 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. Install isolation joint caulking to be installed under Section 07900 – Joint Sealers.

3.6 SEALING

- A. Seal surface of paving using Lithocrete[®] Sealer.
- B. Follow Lithocrete[®] Sealer directions when applying this product.

END OF SECTION