

SECTION 321316.15-2
LITHOCRETE® SEDIMENTARY WALL SYSTEM SPECIFICATION

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® Sedimentary Wall System as indicated on Drawings and as specified herein.
- B. Work included in this Section:
1. Installation of architectural concrete walls called Lithocrete® Sedimentary walls under U.S. Patents (# 5,887,399- # 5,950,394 - # 6,082,074)(TM# 646,052, TM # 1,879,329, TM # 2,358,183, TM # 2,358,054 Reg # 75/646,052)
 2. Only experienced Architectural Cast-in-place Concrete installers, certified to install (Lithocrete®) are acceptable for this project. Acceptance of certification will be based on proof of certification, experience and approved samples and mockups to be provided within 30 days after Notice to proceed. If timeframe is exceeded, suitable certification/experience is not provided, or mockups are unacceptable – installer will not be eligible to install project.
 3. Certified installers are listed below:
 - a. Progressive Hardscapes, *Mike Riggs*, 623.582.2274
mike@progressivehardscapes.com
- 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. Patents (# 5,887,399- # 5,950,394 - # 6,082,074)(TM# 646,052, TM # 1,879,329, TM # 2,358,183, TM # 2,358,054 Reg # 75/646,052) 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.

1.4 QUALITY CONTROL

- A. Quality control to be maintained by licensed installers of Lithocrete® Sedimentary walls throughout duration of project.
Approved contractor: Progressive Hardscapes, 623-582-2274
mike@progressivehardscapes.com
- B. Concrete Subcontractor Qualifications: provide evidence to indicate successful experience in providing Lithocrete® Sedimentary walls similar to that specified herein and demonstrate successful experience.
- C. Demonstration of experience: provide a minimum of 2 projects within a 250 mile radius of the project site. A reference list of each of these projects containing job address, phone number of project architect, contractor and/or owner along with 8 ½” 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 2,000 LF of Lithocrete® Sedimentary Walls.
- D. Failure to submit the information and photos shall be considered a non-responsive bid and therefore the bidder shall be considered non-responsive .
- E. Supervision: On site superintendent must have a minimum of 2 years experience installing Lithocrete® Sedimentary Walls.

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 30 days after contract award a typed list of products specified in this Section.
- B. Shop Drawings:
 - 1. Submit shop drawings for reinforcing steel and accessories in accordance with ACI standards.
 - 2. Architectural Cast-in-Place Jointing and Pour Sequence Plan: Submit blueprints indicating the following:
 - a. Proposed sedimentary layers and vertical dimensions of each layer.
 - b. List of each material to be used and clearly indicated on elevation shop drawing.

- 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 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. Basis of testing, i.e. UBC 2605 D4 and Title 24 2604 D4.
 - 10. Water/cement ratio.
 - 11. PSI rating.
 - 12. Signature of testing laboratory manager.

- D. Lithocrete® Seeded Aggregate (extra stock):
 - 1. One 1-pound sample of each Lithocrete® aggregate specified.

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 long Lithocrete® sedimentary wall system as 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. Do not remove mock-ups from site until project completion and approval by Owner's Authorized Representative.

1.11 PROJECT CONDITIONS

- A. Keep work area clean, and in a safe and workman-like 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.
- D. Sedimentary wall colors to be formulated by installer per Lithocrete® wall systems.
- E. Special colors and textures are achieved per Lithocrete® sedimentary wall systems with consent of the design intent of the 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 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 LITHOCRETE® AGGREGATE

- A. Refer to Drawings for specified Lithocrete® aggregate type, size, color, and distribution percentage.
- B. Lithocrete® aggregate may vary, however must be consistent with shop drawings.

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 project Shop Drawings for color type. All Lithocrete sedimentary wall system's incorporate project specific color systems and shall be referenced in the project submittal package after contract and verified in the close out package to ownership.
- B. Air Entrainment Admixtures: Conforming to ASTM C260.
 - 1. Acceptable Manufacturers:

- a. Grace Construction Products; Daravair[®], (800) 433-0020 or www.graceconstruction.com/concrete/air_entraining.html#daravair.
 - b. Master Builders, Inc.; Micro-Air[®], (800) 628-9990 or www.masterbuilders.com/MB/pub/Product.asp?TypeCat=2&ParentID=78&ProductID=22.
 - C. Water Reducing Admixtures: Conforming to ASTM C494, Type A.
 - 1. Acceptable Manufacturers:
 - a. Grace Construction Products; WRDA[®] (800) 433-0020 www.graceconstruction.com/concrete/water_reducers.html#wrda.
 - b. Master Builders, Inc.; Micro-Air[®] (800) 628-9990 or www.masterbuilders.com.
- 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 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; Fibermesh 150 Stealth[®] – 1/4" long (423) 892-8080 or <http://fibermesh.com/product/microsynthetic.html>
 - b. Grace Construction Products; MicroFiberTM (800) 433-0020 or www.graceconstruction.com/concrete/fibers.html
 - 2. Application Rate: 1/2 lb. /cy of mix.

PART 3 EXECUTIONS

3.2 FORMING: FORM MATERIALS FOR STRUCTURAL COMPONENTS

- A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork with plywood, panel type materials to provide continuous, straight, smooth, exposed surfaces.
 - 1. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on Contract Drawings.
 - 2. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

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, by owner.
- C. Concrete Mix Criteria:
 - 1. Slump: minimum of 3 inch, max 8 inch to match mockup.
 - 2. Minimum PSI Rating at 28 days: 3,000.
 - 3. Maximum Water/cement ratio: 0.65.
 - 4. Coarse aggregates depending on desired appearance may vary from 1" to 3/8".
 - 5. Admixtures:
 - a. Air entrainment: Per local standards
 - 6. Fly ash: ASTM C618 – Type F.
 - 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 Owner's Authorized Representative.
 - 9. Ensure that batch plant guarantees single source supply for cement, sand, and aggregate for the entire project.

3.4 LITHOCRETE® SEDIMENTARY WALL INSTALLATION

- 1. Lithocrete® Sedimentary walls are a patented wall process. Installation of Lithocrete® walls must be performed by a licensed Lithocrete® installer only.
- 2. For certified Lithocrete® installers, see elsewhere in this specification or contact Lithocrete® at 800-899-9921. (Approved installer Progressive Hardscapes)
- 3. Lithocrete® is installed in accordance with U.S. Patents: U.S. Patents (# 5,887,399- # 5,950,394 - # 6,082,074)(TM# 646,052, TM # 1,879,329, TM # 2,358,183, TM # 2,358,054 Reg # 75/646,052)
- 4. Lithocrete® process incorporates use of following patented products:
 - a. Lithocrete® Etch Retarder®.
 - b. Lithoseal™ Sealer.

3.5 CURING

- A. After initial Lithocrete® installation, cure for minimum 7 days.

3.6 OPTIONAL IF SPECIFIED - SEALING

- A. Seal surface of wall surface using Lithocrete® Sealer.

4.0 Acceptance of work

- A. Due to the natural appearance of sedimentary walls it is common to not use control joints, random cracking is part of the overall aesthetics of the system. Random cracking is acceptable in the finished product. Lithocrete® Sedimentary walls contain natural materials and acceptance is at the sole discretion of Lithocrete® should lack of owner acceptance become an Issue.

END OF SECTION

(Name of Project)

REQUIRED LITHOCRETE® SEDIMENTARY WALLS SUB-CONSULTANT INFORMATION

The proper installation of specialty concrete finishes such as Lithocrete® is critical to the success of the project. The bidder, **or the bidder's subcontractor**, shall have two (2) or more Lithocrete® Sedimentary Wall projects installed.

I. LICENSED LITHOCRETE INSTALLER

- Contractor: _____
- Project Manager/Foreman: _____
- Phone Number: _____

II. COMPARABLE PROJECT LIST (PROVIDE MINIMUM OF 3)

1. Project Name: _____
Address: _____
Name of Contact: _____
Phone Number: _____

2. Project Name: _____
Address: _____
Name of Contact: _____
Phone Number: _____

3. Project Name: _____
Address: _____
Name of Contact: _____
Phone Number: _____

4. Project Name: _____
Address: _____
Name of Contact: _____
Phone Number: _____

5. Project Name: _____
Address: _____
Name of Contact: _____
Phone Number: _____

Provide two (2) color photos, 8"x10" in size, of each installation listed above. Photos shall clearly show the detail associated with the Lithocrete® finish or the photo(s) will be rejected. The bidder must submit the above information along with the color photos with the bid. Failure to submit the information and photos shall be considered a non-responsive bid and therefore the bidder shall be considered non-responsive.

Signature of Bidder

Date