



DEC Architectural Composites

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**SECTION 034900
ECHO-STONE™
GLASS FIBER REINFORCED CEMENT**

PART 1. GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, Conditions of the Contract, and Division 1 Specification sections apply to work of this section.

1.02 SUMMARY

- A. Section Includes: ECHO-STONE™ fabrication and installation as scheduled and shown on the architectural drawings.

1.03 RELATED WORK IN OTHER SECTIONS

- A. Section 03300- Cast-In-Place Concrete
- B. Section 03490- Glass Fiber Reinforced Precast Concrete
- C. Section 04720- Cast Stone

1.04 REFERENCE STANDARDS

- A. ASTM C947: Test Method for Flexural Strength
- B. ASTM E-84: Test Method for Surface Burning Characteristics of Building Materials.
- C. MNL-128: Range of Premix Properties Recommended to PCI.

1.05 SUBMITTALS

- A. Samples: Submit four (4) each, 12" x 12" samples demonstrating finish to be supplied (finish per contract).
- B. Shop Drawings: Submit shop drawings delineating all details required for fabrication and installation. Shop drawings to indicate the necessary blocking and attachment to the building or framing as required to support and secure the Echo-Stone material only. Framing details and structural support of framing is not the responsibility of the Echo-Stone manufacturer, and it is to be engineered by others unless previously agreed to by contractor/subcontractor and DEC, and noted accordingly in the material supply contract.

1.06 QUALITY ASSURANCE

- A. Manufacturer: Firm with manufacturing and delivery capacity required for the project, shall have successfully completed at least ten projects within the past five years, utilizing systems, materials and techniques as herein specified.
- B. Fabricator must own and operate its own manufacturing facilities for all material components. "Stick Built" or "Kit of parts Systems" consisting of components from a variety of manufacturers will not be considered or accepted.
- C. All Echo-Stone forms shall match approved samples.
- D. All Echo-Stone forms will be installable according to details submitted in shop drawings.

1.07 MANUFACTURER'S QUALIFICATIONS

- A. Firms specified in Approved Manufacturer (section 2.01) must demonstrate their capabilities and experience by including lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Handle, store and transport Echo-Stone parts according to manufacturer's recommendations. All materials shall be protected during fabrication, shipment, site storage and erection to prevent damage to the finished work from other trades. Store materials inside a well-ventilated area, away from uncured concrete and masonry, and protected from weather moisture, soiling, abrasion, and extreme temperatures.
- B. Protect fabrications from damage by retaining or duplicating shipping protection in place until installation.
- C. Damage Responsibility: Except for damage caused by others, the installer is responsible for chipping, cracking, or other damage to Echo-Stone parts, after delivery to the job site and until installation is complete and inspected and approved by the contractor and architect.

1.09 WARRANTY

- A. Warrant fabrications to be free from defects due to materials and workmanship for one year.

PART 2. PRODUCTS

2.01 APPROVED MANUFACTURER

- A. **DEC ARCHITECTURAL COMPOSITES**
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- B. The listed manufacturer shall not be construed as closing the specifications to other prospective manufacturers, but rather as establishing a level of quality in a composite fabrication system. Other manufacturers may be submitted for approval, as provided for in the specifications at least 14 working days prior to submission of bids. Companies desiring to submit a proposal shall submit all descriptive information of the system proposed including photographs and shop drawings of at least three projects similar in detail and scope.

2.02 FABRICATED PRODUCTS

- A. ECHO-STONE™ will be fabricated with a proprietary blend of cementitious minerals, aggregates, polymers and glass fibers to achieve a typical range of physical properties.

2.03 PHYSICAL PROPERTIES OF ECHO-STONE

<u>Property Value</u>	<u>Test Method/Result</u>
Barcol Hardness	ASTM-D-2583 43 Points
Compression	ASTM-C-39 4,000 psi
CTE Average	ASTM-D-696 11.0 x 10 ⁻⁶ in./in./F°
Density	ASTM-D-792 105 lbs/cu.ft.
Flammability – Class I Materials	ASTM-E-84 25 or less Flame/50 or less Smoke
Flexural Strength	ASTM-D-790 3,050 psi
Impact Strength	ASTM-D-256 190 ft. lbs./in.
Tensile	ASTM-D-638 3,500 psi
Unit Weight (lbs./sq.ft. at ½")	3-5 lbs.

2.04 FINISH

- A. Surface Texture/ Exposed side: Smooth or as indicated on drawing.
- B. Finish: Integral color and exposed aggregate with a factory applied sealer coat ready for installation, or as specified. Due to the natural variation of aggregate materials, finished part colors may vary part to part and/or on an individual part.

2.05 TOLERANCES

- A. Part Thickness: ±½
 Dimensions all directions: ±3/16
 Variation from Square: ⅛ inch
- B. Hardware Location Variation: ±¼ inch.
- C. Warpage or bowing 1/4" in 8 ft.

2.06 IDENTIFICATION

- A. Identify each part with a permanent part number.
- B. Number parts to coordinate with shop drawings.

2.07 CURING AND CLEANING

- A. Cure and clean components prior to shipment.

2.08 ANCHORS AND FASTENERS

- A. The installer is to provide anchors and fasteners and other accessories required for proper installation of fabrications as recommended and approved by the composite fabricator and the project architect; however, the necessary blocking and attachment to the building or framing as required to support and secure the Echo-Stone material, as well as any framing details and structural support of framing, is not the responsibility of the Echo-Stone manufacturer, and it is to be engineered by others unless previously agreed to by contractor/subcontractor and DEC, and noted accordingly in the material supply contract.

PART 3. EXECUTION

3.01 PRE-INSTALLATION EXAMINATION

- A. Installer to observe field conditions and verify that substrates are ready for installation of fabrications.
- B. Proper on-site storage of materials must be performed to ensure all materials are protected from the elements and other trades. **ECHO-STONE™** parts must be stored or supported to prevent deformation, warping, bowing, physical damage and/or conditions that may make the product unsuitable for intended use.
- C. Installer to check field dimensions affecting the installation of **ECHO-STONE™** fabrications.
- D. Installer to verify that bearing surfaces are true and level.
- E. Installer to verify that support framing has been constructed to allow accurate placement, alignment and connection of fabrication to structure.
- F. Installer to report discrepancies between design dimensions and field dimensions, which could adversely affect installation, to the contractor and architect.
- G. Do not proceed with installation until discrepancies are corrected, or until installation requirements are modified and approved by the contractor and architect.
- H. Start of installation constitutes acceptance of existing conditions.

3.02 INSTALLATION

- A. Install fabrications in accordance with manufacturer's instructions and approved shop drawings.

3.03 ALLOWABLE TOLERANCES FOR INSTALLED UNITS

- A. Maximum Offset from True Alignment: ¼ inch 8 feet.
- B. Maximum Variation from True Position: ¼ inch in 8 feet.

3.04 CLEANING

- A. Clean installed **ECHO-STONE™** fabrications using cleaning methods and materials approved by manufacturer.

3.05 PROTECTION OF INSTALLED FABRICATIONS

- A. Comply with General Contractor's recommendations and instructions for protecting installed Fabrications during constructions activities.

END OF SECTION