

SIMULATED/MANUFACTURED STONE



For best results, display hidden "note to specifier".

**\*\* NOTE TO SPECIFIER \*\*** Boulder Creek Stone Products; standard and custom items.

This section is based on the products of Boulder Creek Stone Products Inc., which is located at:

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Boulder Creek Stone Products include simulated stone veneer items and are available in a wide variety of designs and sizes. To specify standard designs, obtain catalog by phone or at their web site. Verify lead times on custom items.

SECTION 04730 – SIMULATED/MANUFACTURED STONE

PART 1 GENERAL

1.1 SECTION INCLUDES

**\*\* NOTE TO SPECIFIER \*\*** If necessary, make a brief list of the items required.

- A. Simulated stone assembly installed as wall veneer over a scratch coat prepared substrate as indicated on drawings.

1.2 RELATED SECTIONS

**\*\* NOTE TO SPECIFIER \*\*** Delete any sections below not relevant to this project; add others as required.

**\*\* NOTE TO SPECIFIER \*\*** In those circumstances where there is a probability of foreign matter (i.e. food products, pop, beer, grease, etc.) being spilled on the stone, consider sealing the stone with a penetrating concrete sealer to make clean up easier.

- A. Section 07190 – Water Repellants.
- B. Section 07920 - Joint Sealers: Sealant materials for open joints.

### 1.3 REFERENCES

**\*\* NOTE TO SPECIFIER \*\*** Delete references from the list below that are not actually required by the text of the edited section.

- A. ACI 530 - Building Code Requirements for Masonry Structures & Specifications for Masonry Structures.
- B. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- C. ASTM C 33 - Standard Specification for Concrete Aggregates.
- D. ASTM C 67 – Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
- E. ASTM C 140 – Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
- F. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
- G. ASTM C 150 - Standard Specification for Portland Cement.
- H. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- I. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.
- J. ASTM C 778 - Standard Specification for Standard Sand.
- K. ASTM C 847 - Standard Specification for Metal Lath.
- L. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.
- M. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Hot and Cold Weather Masonry Construction.

### 1.4 SYSTEM DESCRIPTION

- A. General:

**\*\* NOTE TO SPECIFIER \*\*** Choose 1. for non-grouted assembly or 2. for grouted assembly.

- 1. A mortar set and grouted veneer simulated stone assembly.
  - 2. A mortar set modular veneer simulated stone with 2", 4", and 6" high units (Fast Stak®) and 3" and 6" high units (Western Ledge Stak®). The units are made with flat abutting surfaces that do not require a grout joint.
- B. Design: Comply with applicable requirements of governing authorities and codes of types of masonry construction shown, except where more stringent requirements are required.

**\*\* NOTE TO SPECIFIER \*\*** Select design application.

- 1. Wood Frame Construction: Boulder Creek Stone is designed to be applied over wall surfaces of interior plaster, interior drywall, plywood or any exterior sheathing or stucco. In all cases, a metal lath and scratch coat must be installed prior to the installation of stone. A scratch coat of mortar is applied into and over the lath. Lath fasteners require 1" penetration into framing members. Exterior applications will require a weather resistant barrier; consult your local building codes.
- 2. Masonry Construction: Boulder Creek Stone may be applied to a masonry surface provided a metal lath and scratch coat of mortar is applied into and over the lath.
- 3. Metal Stud Construction: Boulder Creek Stone may be applied to metal stud construction, which is a minimum of 18 gauge galvanized metal. Metal studs shall be covered with sheathing material for interior or exterior applications as needed. Metal lath shall be secured to the studs spaced a maximum of 16" on center with corrosion resistant Number 8 self-tapping screws spaced 6" on center. The screws are to penetrate into the metal studs a minimum of ½". A scratch coat of mortar is applied into and over the lath. Exterior applications will require a weather resistant barrier; consult your local building codes.

4. Sheet Metal Construction: Boulder Creek Stone may be applied to a number 18 gauge galvanized sheet metal wall surface. Metal lath shall be secured to the studs spaced a maximum of 16" on center with corrosion resistant Number 8 self-tapping metal screws spaced 6" on center. A scratch coat of mortar is applied into and over the lath. Exterior applications will require a weather resistant barrier; consult your local building codes.

C. Performance:

1. Minimum tested values complying with ICBO Acceptance Criteria for Precast Stone Veneer (AC51) testing standards.

|                                  | Boulder Creek | ICBO Criteria |
|----------------------------------|---------------|---------------|
| a. Freeze thaw:                  | 0.9% loss     | 3% loss max   |
| b. Compressive strength:         | 5400 psi      | 1800 psi min  |
| c. Shear Bond with Scratch Coat: | 55.3 psi.     | 50 psi min    |

## 1.5 SUBMITTALS

- A. Submit under provisions of Section 01330.
- B. Qualifications: Submit certifications and test reports indicating compliance with Quality Assurance requirements.
- C. Shop Drawings: Provide drawings showing dimensions, layout, expansion and control joints, and interface with adjacent work.
  1. Include field measured dimensions of the spaces where items are to be installed, if critical to proper installation.
  2. Provide drawings of at least as large scale as the architectural drawings.

**\*\* NOTE TO SPECIFIER \*\*** Delete grout provisions when specifying non-grouted assemblies.

- D. Samples of Grout: Two samples of sufficient size to review appearance and color.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A minimum of five years experience in the manufacture of simulated stone, and having adequate facilities and capacity to produce the quantity and quality specified in the time frame required.
- B. Installer Qualifications: Regularly engaged and experienced in the installation of simulated stone, employing experienced masons.
- C. Product Requirements:
  1. Independent testing of product required for ICBO certification in compliance with AC51 and meeting physical characteristics specified.
  2. Products proposed have been exposed to weather for at least one year without degradation.

## 1.7 DELIVERY, STORAGE, AND HANDLING

Store units off the ground on material that will not stain the stone; if long term storage is necessary, cover with polyethylene or other non-staining waterproof material.

## 1.8 WARRANTY

- A. Provide manufacturer's written warranty per Section 01795.

- B. Material Warranty: Warrant materials against defects after completion and final acceptance of Work for a period of 30 years. Manufacturer shall furnish, free-of-charge, new materials to replace materials determined to be defective. This material warranty does not include labor for installation.
  - 1. The warranty shall cover only manufacturing defects of the manufactured stone products and does not extend to or cover damage resulting from:
    - a. Settlement of the building or other wall movement.
    - b. Contact with chemicals, paint or staining.
    - c. Discoloration from airborne contaminants, oxidation, or fading associated with the normal aging process.
    - d. Faulty installation.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Boulder Creek Stone Products Inc.

**\*\* NOTE TO SPECIFIER \*\*** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01630.

### 2.2 UNITS

- A. Simulated Stone: Engineered by manufacturer to achieve specified strength, color, and texture, desired handling characteristics, and resistance to effects of weathering.
  - 1. Thickness: 1 to 3-1/2 inches.
  - 2. Density: 90 pcf.
  - 3. Compressive Strength: 1800 psi, minimum, at 28 days, when tested in accordance with ASTM C 67.
  - 4. Water Absorption: 18%, maximum, when tested in accordance with ASTM C 140.
  - 5. Thermal Resistance: Not less than an R of 0.865.
  - 6. Smoke and Fuel Contribution: UL Listed 0/0.
  - 7. Weather Resistance: Mix design proven by experience to be resistant to degradation by weather.

**\*\* NOTE TO SPECIFIER \*\***Mortar and grout set stone unit design.

- B. Stone Design and Color for Grouted System:

**\*\* NOTE TO SPECIFIER \*\***Insert color choice of stone design selected by referring to manufacturer's product information.

- 1. Bavarian Castle®: Adorning the estates and castles of European royalty for centuries, the Bavarian Castle adds a strong, regal look.
  - a. York Gray S6220-3
  - b. Westwood Brown S6230-3
  - c. Antique Buff S6240-4
  - d. Norwich S6250-5
  - e. Liverpool S6255-6
  - f. Tudor S6260-6

2. Bluff Stone: Several flat stones stacked one on top of another, complete with warm, inviting, colors, and soft, wind-eroded edges.
  - a. Outback S4800-8
  - b. Cinnamon S4810-8
  - c. Sunset S4820-8
  - d. Seneca S4830-4
  - e. Easton S4835-5
  - f. Harrison S4840-5
3. Cliffstone: An eye-catching stone with less protrusion than our Country Ledge, yet slightly flatter than Montana Ledge.
  - a. Durango S5150-0
  - b. Apache S5170-4
  - c. Foxboro S5180-4
  - d. Montour S5185-4
  - e. Bradford S5190-7
4. Country Ledge: A smoother version of our popular Montana Ledge.
  - a. Brown S4000-8
  - b. Vancouver S4005-7
  - c. Teton S4015-8
  - d. Glacier Buff S4025-8
  - e. Jackson S4035-7
  - f. Fossil Beige S4060-8
  - g. West Chester S4095-7
5. Eastern Fieldstone: This stone offers a unique uniformity found only on the Atlantic seaboard; a shared heritage of rural and urban.
  - a. Englewood S6000-5
  - b. Tishbury S6010-5
  - c. Stonehill S6015-5
  - d. Hampton S6020-5
  - e. Walden S6025-5
  - f. Hanover S6030-7
6. Italian Fieldstone: Rugged. Rustic. Romantic. Italian Fieldstone is as versatile as your vision needs to be.
  - a. Tivoli S5200-5
  - b. Venice S5205-5
  - c. Merzell S5210-5
  - d. Bergamo S5215-5
  - e. Toscana S5220-5
  - f. Amaretto S5225-7
7. Montana Ledge: A popular, rugged, stone that utilizes stratification on the stone face to enhance a natural appearance. Slightly thicker than Country Ledge.
  - a. Rocky Mountain S4610-8
  - b. Cactus Ridge S4620-8
  - c. Suede Gray S4630-8
  - d. Leather Brown S4650-8
  - e. Chesapeake S4670-4
  - f. Cameron S4680-6
  - g. Ronan S4675-6
8. Mountain Blend: A mixture of Rectangular Ledge Stones and Random Fieldstones.
  - a. Comforts of Home S9030-6
  - b. Athena S9035-7
  - c. Barton S9040-7
  - d. Kenwood S9045-7
  - e. Medena S9050-7
9. Nuggets: A miniature version of River Rock, ranging in size from 2" to 5" in diameter, and available in all the River Rock colors.

- a. Superior S5600-9
- 10. Ohio Rubble: A rustic, weathered stone with soft rectangular edges and warm colors.
  - a. St. Claire S4705-7
  - b. Olin Valley S4710-8
  - c. Monroe S4715-7
  - d. Prairie Mountain S4720-8
  - e. Smokey Hollow S4725-8
  - f. Oklahoma Crème S4750-9
  - g. Hudson Bay S4760-6
  - h. Stonehenge S4775-4
  - i. St. Charles S4780-5
- 11. Pebble Stone: A smaller, thinner version of Washed River Rock perfect for customizing building projects.
  - a. River Bed S5400-8
- 12. Prairie Bluff: An exciting new pattern that combines varying thicknesses of stone to create three dimensional depth and striking visual contrast.
  - a. Navajo S5800-9
  - b. Yuma S5810-0
  - c. Laner S5820-0
  - d. Oakwood S5830-4
  - e. Camino S5855-5
  - f. Mojave S5860-5
  - g. Red Mountain S5865-5
  - h. Ottawa S5870-6
  - i. Varena S5875-6
  - j. Newbury S5885-7
- 13. River Rock: A popular pattern consisting of gently rounded stones of varying shapes and sizes, now available in 9 different colors to match any décor.
  - a. Mineral Gray S4320-6
  - b. Manistee S4325-6
  - c. Comfort Blend S4330-8
  - d. Wilderness S4335-6
  - e. Northern Blend S4345-8
  - f. Desert Rust S4350-8
  - g. Natures Blend S4355-8
  - h. Copper Mountain S4370-8
  - i. Minnesota Blend S4385-8
- 14. Sangria: An elegant stone that replicates the look of quarried stone with a chiseled face front.
  - a. Castano S4200-8
  - b. Spanish Wheat S4210-8
  - c. Morada S4215-6
  - d. Auburn S4230-7
  - e. Tolono S4240-4
  - f. Pueblo S4245-5
- 15. Southeastern Ledge: This stone's dramatic appearance is the choice for true creative expression and southeastern charm.
  - a. Tupelo S6100-3
  - b. Cajun S6110-3
  - c. Quincy S6115-7
  - d. Hamilton S6120-3
  - e. Savannah S6130-3
  - f. Saratoga S6145-4
  - g. Sierra Madre S6150-4
  - h. Barrington S6155-4
  - i. Butternut S6165-5

- j. Allegheny S6170-5
  - k. Wilmington S6175-5
  - l. Westport S6180-5
  - m. Crimson Mountain S6185-6
  - n. Mohawk S6190-6
16. Splitface: A natural looking split-face stone to enhance your home or building.
- a. Great Lakes S4250-8
  - b. Mansfield S4255-7
  - c. Buckeye Blend S4260-6
  - d. Sheffield S4265-7
  - e. Sagebrush S4270-9
  - f. Painted Desert S4280-0
  - g. Willows S4285-0
  - h. Granite S4300-8
  - i. Michigan S4290-1
17. Venetian Cobble: This stone is as symmetric as it is random. This stone will render you inspired.
- a. Napoli S5900-5
  - b. Biella S5950-5
  - c. Milan S5910-5
  - d. Salerno S5915-5
  - e. Genoa S5920-5
  - f. Lamson S5925-5
  - g. Molise S5930-6
  - h. Naples S5935-7
  - i. Florence S5940-7
18. Washed River Rock: Similar to our River Rock pattern, with a smoother face and detailed erosion lines for a natural, soothing, look and feel.
- a. Barren S5305-5
  - b. Erie S5310-6
  - c. Escanaba S5315-6
  - d. Potomac S5320-6
  - e. Yakima S5325-6
19. Weathered Edge: A durable, massive stone specially detailed with stratification on the face to enhance the stone's aged, weathered, appearance.
- a. Fon-Du-Lac S5100-8
  - b. Sun Prairie S5110-8
  - c. Kodiak S5120-0
  - d. Pepin S5125-5
  - e. Kenosha S5130-5
  - f. Trenton S5135-7
  - g. Bristol S5140-7
- C. Stone Design and Color for non-grouted System:
1. Fast Stak®: Grace and Elegance meet strength. Created with flat, abutting surfaces that eliminate the need for grout, Fast Stak quickly establishes the unheralded appeal of permanence to any structure
- a. Ancona S5005-7
  - b. Mirage Gray S5010-9
  - c. Cashmere S5015-7
  - d. Gunflint Gray S5020-9
  - e. Velarde S5025-7
  - f. Jaffa Beige S5040-9
  - g. Cheyenne Ridge S5050-8
  - h. Nema S5060-8
  - i. Sable S5070-8

- j. Russet Brown S5090-6
- 2. Western Ledge Stak®: Like its namesake, this larger ledgestone evokes the rugged character of the western landscape. The stone is a weathered appearance requiring no grout between the stones.
  - a. Appaloosa S4900-2
  - b. Moroccan S4910-3
  - c. Mustang S4920-3
  - d. Lasino S4925-5
  - e. Belgian S4930-5
  - f. Morgan S4935-7

## 2.3 MATERIALS

- A. Pigment: Achieve desired color using only cement and aggregate to extent possible.
  - 1. Limit quantity to 10 percent by weight of cement.
  - 2. Inorganic, natural or synthetic iron oxide pigments complying with ASTM C 979 and guaranteed by manufacturer to be lime proof.
    - a. Cement grade carbon black pigment is not permitted.
- B. Sand: Masonry sand per ASTM C144, aggregate graded with 100 percent passing No. 16 sieve.
- C. Cement: ASTM C 150 Type I, III, and II white Portland cement. Blended by stone manufacturer to meet stone mix requirements.
- D. Grout Pigments: Inorganic, natural or synthetic iron oxide pigments complying with ASTM C 979 and guaranteed by manufacturer to be lime proof.
- E. Silica Sand: Silica sand per ASTM C778, aggregate containing metal oxides and trace elements specifically engineered and tested by stone manufacturer for stone product characteristics and performance.
- F. Lightweight Clay: Lightweight clay aggregate produced using the rotary kiln process and refined per stone manufacturer's requirements.
- G. Scratch Coat:
  - 1. 1 part cement type I.
  - 2. 2 parts Masonry Sand.
  - 3. Clean water.
- H. Setting Mortar:
  - 1. 1 part cement type I.
  - 2. 2 parts Masonry Sand.
  - 3. Clean water.

**\*\* NOTE TO SPECIFIER \*\*** Delete grout provisions when specifying non-grouted assemblies.

**\*\* NOTE TO SPECIFIER \*\*** Substitute White masonry cement for the Gray, which is the most common used. Can add iron oxide color to the gray or white to get a desired color (the most common usage is to use the standard gray masonry cement without color).

- I. Grout:
  - 1. 1 part masonry cement type N.
  - 2. 2 parts clean washed masonry sand.
  - 3. Clean water.
  - 4. Color: Match Architect's sample.
  
- J. Lath: Fabricated metal lath from galvanized steel: Structural-quality, zinc-coated (galvanized) steel sheet complying with ASTM A 653, G60 minimum coating designation conforming to ASTM C 847 Diamond Mesh. Corrosion resistant 2.5lb or 3.4lb per square yard galvanized diamond wire metal lath
  
- K. Weather Resistant Barrier: Two layers – Grade D Kraft Waterproofing Building Paper as described in UBC standard no. 14-1 Or Two layers of No. 15 Asphalt Type 1 complying with ASTM D 226
  
- L. Nails: 1 3/4" galvanized roofing nails or staples.
  
- M. Screws: Corrosion resistant, Number 8 self-tapping metal screws.
  
- N. Joint Sealer and Accessory Materials: As specified in Section 07920.

## 2.4 SOURCE QUALITY CONTROL

**\*\* NOTE TO SPECIFIER \*\*** The following is an example of procedures that can be used to ensure that color and texture are as envisioned and that the material is of good quality. Edit to suit the project.

- A. Prepare a field mock-up representing the most common shape required on the project.
  - 1. Manufacture the full size unit in color and texture required.
  - 2. Notify Architect when mock-up is ready for inspection. Approved mock-up may become part of the Work.
  - 3. Architect will inspect only for color, texture, and overall appearance complying with specified requirements.
  - 4. Upon approval of mock-up unit, manufacture and install remaining units to match using same materials and mix design.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until supporting structure has been completed; verify that substrates are plumb and true.
  
- B. Check field dimensions and tolerances of supporting structure before beginning installation. Where dimensions and tolerances will prevent proper installation, notify Architect and wait for instructions before beginning installation.

### 3.2 PREPARATION

- A. Environmental Conditions:
  - 1. Maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry Work.
  - 2. Cold Weather Protection: When temperature of outside air is below 40 degrees F, pre-condition materials and finish Work per the requirements set forth in ACI- 530.1, Section 1.8.

3. Hot Weather Protection: Protect masonry construction from direct exposure to wind and sun when erected in ambient air temperature of 99 degrees F in shade with relative humidity less than 50 percent per the requirements set forth in ACI- 530.1, Section 1.8.

### 3.3 INSTALLATION

- A. Moisture Barrier: Install two ply horizontally shingled over the exterior stud construction substrates before applying the lath.
  1. Overlapping a minimum of 2" on the horizontal and 6" on the vertical seams required.
- B. Install metal lath to the prepared substrate.
  1. Overlap minimum of 2" on the horizontal and 6" on the vertical seams required.
  2. Vertical seams shall be at least 16" from a corner. The lath shall be fastened on both sides of the corner, every 6" vertically.
  3. Fasten the lath using nails or staples to the studs on 6 inches vertically with a minimum of 1 inch penetration.
  4. Intermediate fastening to ensure continuous contact of the lath to the substrate is required.
  5. Provide expansion joints in the stone to coincide with expansion joints in the mating surface or as required by architect or engineer specifications.
- C. Scratch Coat
  1. Install a scratch coat of mortar. Using a trowel, apply an even layer of mortar into and over the wire lath obtaining complete coverage. Work the mortar into the holes in the wire lath and scrape off the excess, make certain not to re-expose the wire lath.
  2. While the mortar is still slightly wet, use a soft bristled brush to rough up the scratch coat. Virtually no mortar should be removed within the brushing process.
- D. Layout coursing and corners.

**\*\* NOTE TO SPECIFIER \*\*** Use method below when specifying grouted assemblies.

1. Units shall be coursed and laid from top to bottom.

**\*\* NOTE TO SPECIFIER \*\*** Use method below when specifying non-grouted assemblies.

2. Units shall be coursed and laid from bottom to top.

- E. Set units using industry accepted mortared masonry techniques:
  1. Using a trowel, apply 3/8" to 1/2" of mortar to the back of the stone. Make sure the entire back of the stone is covered.
  2. Set the stone by pressing and moving the stone back and forth to create suction that will hold the stone in a permanent position. Once set further movement or bumping the stone may break the bond.
  3. Remove excess mortar before installing adjacent stones. Keep the face of the stone clean.
  4. Fill in the top of the stone with mortar.
  5. Leave joints open at cornices, copings, projecting courses, and abutting dissimilar materials.
  6. Provide expansion joints in the coursing to coincide with wall expansion joints in substrate.
  7. Keep stone at least 4 inches above grade.

**\*\* NOTE TO SPECIFIER \*\*** Delete grout provisions when specifying Fast Stak® or Western Ledgestak® assemblies.

- F. Mortar Grout Joints:

1. Grout units with a grout bag technique.
  2. Rake top of joint and detail to create a uniform surface and solid joint.
  3. Replace cracked mortar.
- G. Open Joints: Install sealant backer, prime joint surfaces, and install sealant with tooled joint surface matching mortar joints to comply with Section 07920.
- H. Clean stone surface after pointing mortar has set; use dry soft fiber brushes.

#### 3.4 CLEANING AND PROTECTION

- A. Protect installed units from mud, dirt, cement, paint, sealant, and other materials until completion of project; clean soiled units.
- B. To clean, use fiber brushes and clean water if needed; DO NOT clean with acid or commercial cleaners unless specifically approved by manufacturer.
- C. Repair or replace damaged units and units that cannot be adequately cleaned before Substantial Completion; for repair, use only mechanics and techniques approved by manufacturer.

END OF SECTION

V01.07