



Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat*, *SectionFormat*, and *PageFormat*, contained in the *CSI Manual of Practice*.

The section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings.

Delete all "Specifier Notes" when editing this section.

SECTION 04220

ARCHITECTURAL STONE VENEER (ARCHITECTURAL MASONRY VENEER SERIES)

Specifier Notes: This section covers Facestone,sArchitectural Masonry Veneer Series (architectural stone units).

FACESTONEproducts are uniquely produced masonry products which are a high-density mixture of fine aggregate, limestone, silica sand and portland cement. The architectural stone products achieve the classic look, texture, and structural integrity of natural limestone, sandstone, granite and other stone accents. It is able to withstand extreme weathering conditions. Notes should include that the Custom Cast Stone Series, Lightweight Stone Masonry Unit Series and the Architectural Masonry Veneer Series are to be manufactured from a similar mix design to match color and texture.

Consult Reading Rock, Inc. (800.482.6466) for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Architectural Stone Veneer (Facestone,sArchitectural Masonry Veneer Series).

Specifier Notes: Edit the following list of related sections as required for the project. List other sections with work directly related to the architectural stone units.

1.2 RELATED SECTIONS

- A. Section 04060 – Masonry Mortar.
- B. Section 04070 – Masonry Grout.
- C. Section 04200 – Unit Masonry.
- D. Section 04220 – Unit Masonry Assemblies.
- E. Section 04720 – Cast Stone.
- F. Section 04730 – Lightweight Stone Masonry Units.
- G. Section 07900 – Joint Protection.

1.3 REFERENCES

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

- A. ASTM A 615/A 615M - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- B. ASTM A767/A767M - Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- C. ASTM C 33 - Concrete Aggregates.
- D. ASTM C 90 - Loadbearing Concrete Masonry Units.
- E. ASTM C 140 - Sampling and Testing Concrete Masonry Units and Related Units.
- F. ASTM C 150 - Portland Cement.
- G. ASTM C 270 - Mortar for Unit Masonry.
- H. ASTM C 426 - Linear Drying Shrinkage of Concrete Masonry Units.
- I. ASTM C 494 - Chemical Admixtures for Concrete.
- J. ASTM C 666 - Resistance of Concrete to Rapid Freezing and Thawing.
- K. ASTM C 979 - Pigments for Integrally Colored Concrete.
- L. ACI 530 “Building Code Requirements for Masonry Structures”

1.4 DEFINITIONS

- A. Architectural Stone Veneer (Facestone, sArchitectural Masonry Veneer Series): An architectural stone unit manufactured to copy fine grain texture and color of natural cut stone. Meets ASTM C 90 requirements.
- B. Dry Cast Concrete Products: Manufactured from zero-slump concrete.

C. Machine Casting Method: Vibratory compaction by machine of earth-moist, zero-slump concrete against rigid mold until it is densely compacted.

1.5 SUBMITTALS

A. Comply with Section 01330 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data.

Specifier Notes: Edit the shop drawing submittal description as required for the project.

C. Shop Drawings: Submit manufacturer's shop drawings, including profiles, cross sections, modular unit lengths, reinforcement (if required), exposed faces, anchors and anchoring method recommendations (if required), and annotation of architectural stone units, types and location.

D. Samples: Submit pieces of manufacturer's architectural stone units that represent general range of texture and color proposed to be furnished for project.

E. Test Results:

1. Submit manufacturer's test results from architectural stone units previously made by manufacturer using materials from same sources proposed for use in project.

F. Manufacturer's Project References: Submit list of projects similar in scope, including project name and location, name of architect, and type and quantity of architectural stone units installed.

G. Warranty: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Sufficient plant facilities to provide quality, shapes, quantities, and sizes of architectural stone units required without delaying progress of the Work.

2. Minimum of 15 years experience in producing masonry units.

3. Custom Cast Stone Series and Architectural Masonry Veneer Series are to be manufactured from a similar mix design to match color and texture.

Specifier Notes: Mock-ups are recommended and will add expense to the project. Scope of the mock-up construction must be clearly specified or indicated on the drawings.

Mock-ups allow the Architect to verify:

1. Texture and color of the architectural stone units.

2. Fit of adjacent units.

3. Quality of construction.

Revise as required for the project. Delete this paragraph if mock-ups are not required.

4. Manufacturer shall have an internal Quality Assurance Testing Program with certified laboratory technician(s).

B. Mock-Ups: Provide full-size architectural stone units for use in construction of mock-ups. Approved mock-ups shall become the standard for appearance and workmanship for project.

Specifier Notes: Delete **one** of the following **two** sentences.

1. Mock-ups shall remain as part of the completed Work.
1. Mock-ups shall not remain as part of the completed Work. At Architect's direction, demolish mock-ups and remove debris.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver architectural stone units secured to shipping pallets and protected from damage and discoloration.
2. Provide itemized shipping list.
3. Number each piece individually, as required, to match shop drawings and schedules.

B. Storage:

1. Store architectural stone units and installation materials in accordance with manufacturer's instructions.
2. Store architectural stone units on pallets with nonstaining, waterproof covers.
3. Do not double stack pallets.
4. Ventilate units under covers to prevent condensation.
5. Prevent contact with dirt and splashing.

C. Handling:

1. Protect architectural stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage.
2. Handle long units at center and both ends simultaneously to prevent cracking.
3. Do not use pry bars or other equipment in a manner that could damage units.

Specifier Notes: Revise Scheduling as required for the project. Delete this article if not required.

1.8 SCHEDULING

- A. Schedule and coordinate production and delivery of architectural stone units with unit masonry work.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Reading Rock, Inc., 4600 Devitt Drive, Cincinnati, Ohio 45246
Phone (800) 482-6466 Fax (513) 874-2361
Web Site blogspot.FACESTONE.com e-mail info@readingrock.com

2.2 APPROVED DISTRIBUTOR

Specifier Notes: Edit Approved Distributor information as required for the project. Delete this article if not required.

2.3 ARCHITECTURAL STONE VENEER (ARCHITECTURAL MASONRY VENEER SERIES)

- A. Architectural Stone Veneer: Facestone, sArchitectural Masonry Veneer Series.

B. Compliance: ASTM C 90.

Architectural Stone Veneer

04220

C. Casting Method: Machine.

Specifier Notes: Specify texture, color and required units. Custom color matches are available when the quantity of FACESTONE products exceeds 7,500 square feet. Consult a FACESTONE distributor for additional information and limitations.

D. Texture: [Smooth] [Split-face] [Chiseled-face] [Chamfered] [As indicated on the drawings].

E. Color: [Bur Ridge] [Brownstone] [Buffstone] [Charlotte Tan] [Clay] [Commonwealth] [Crème Buff] [Crystal White] [Flax] [Golden Sky] [Light Gray] [Lily White] [Merlot] [Old Ohio] [Riesling] [Savannah] [Shadow] [Slate] [Smoke Gray] [Smokehouse] [Starbuck] [Wheatstone]
[_____] [As indicated on the drawings].

F. Units: [ST-004] [ST-005] [ST-003] [ST-001] [As indicated on the drawings].

G. Test Results:

1. Compressive Strength, ASTM C 140: Typical Facestone, sArchitectural Masonry Veneer Series compressive strength range is 3,000 - 5,000 psi at 28 days.
2. Absorption, ASTM C 140: Typically less than 6 percent at 28 days.
3. Linear Shrinkage, ASTM C 426: Maximum .065 percent.
4. Density, ASTM C 140: Typically greater than 120 pounds per cubic foot.

H. Curing: Cure in enclosed chamber at 95 percent relative humidity and 95 to 120 degrees F for 12 to 18 hours and yard cure for 350 degree-days.

2.4 ARCHITECTURAL STONE VENEER MATERIALS

Specifier Notes: Manufacturer will choose type and color of portland cement and aggregates based on the architectural stone unit color specified by the Architect.

A. Portland Cement: ASTM C 150, Type I or III. White and/or gray as required to match specified color.

B. Coarse Aggregates: ASTM C 33, except for gradation. Granite, quartz, or limestone.

C. Fine Aggregates: ASTM C 33, except for gradation. Manufactured or natural sands.

D. Pigments: ASTM C 979, except do not use carbon black pigments. Inorganic iron oxide pigments.

E. Water Reducing, Retarding, and Accelerating Admixtures: ASTM C 494.

F. Other admixtures: integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.

G. Water: Potable.

2.5 TEXTURE AND COLOR

- A. General: Match texture and color of full-size sample on file with Architect.
- B. Texture of Surfaces Exposed to View:
1. Fine-grained texture similar to natural stone and architectural stone units.
 2. Approximately equal to approved sample when viewed in direct daylight at 10 feet.
- C. Surface Air Voids:
1. Size: Maximum 1/32 inch.
 2. Density: Less than 3 occurrences per any 1 square inch.
 3. Viewing Conditions: Not obvious under direct daylight at 10 feet.
- D. Finish:
1. Minor chipping resulting from shipping and delivery shall not be grounds for rejection of units.
 2. Minor chips shall not be obvious under direct daylight at 20 feet, as determined by Architect.
 3. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
- E. Color Variation:
1. Viewing Conditions: Compare in direct daylight at 10 feet, between units of similar age, subjected to similar weathering conditions.

2.6 MORTAR

Specifier Notes: Edit the following two sentences as required.

- A. Mortar: [ASTM C 270, Type N] [As specified in Section 04060] [As specified in Section 04200] [As specified in Section 04220].
- B. Mortar Materials: [As specified in Section 04060] [As specified in Section 04200] [As specified in Section 04220].

2.7 ACCESSORIES

Specifier Notes: Specify Type 304 stainless steel anchors for highly corrosive environments, such as coastal areas, and for 100-year type construction.

Shelf angles and other similar structural items should be galvanized.

Reading Facestonedoes not supply anchoring hardware for FACESTONEproducts, but will assist in specifying anchors for a specific application.

- A. Anchors: Non-corrosive type, sized for conditions. [Brass] [Hot-dip galvanized steel] [Type 304 stainless steel]
- B. Sealant: As specified in Section 07900.

Specifier Notes: When the project includes both brick and FACESTONEproducts, specify Prosoco Sure Klean→ 600 Detergent, Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean Vana Trol, Light Duty Cleaner (for dark units) or EaCo Chem NMD-80 depending on the type of brick to be used. Consult

Reading Facestone for additional information.

C. Cleaner: Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean 600 Detergent Prosoco Sure Klean Vana Trol, Prosoco Light Duty Cleaner * or EaCo Chem NMD-80. If EaCo Chem NMD-80 is used follow their application process.

* Note: Aggressive cleaners may remove too much of the concrete surface paste making some of the color to appear to be “stripped.” Therefore, on darker units a less aggressive cleaner such as Prosoco’s Light Duty Cleaner should be used to maintain color.

2.8 FABRICATION

A. Shapes: As indicated on drawings.

2.9 TOLERANCES

A. General: Manufacture architectural stone units within tolerances in accordance with ASTM C 90, unless otherwise specified.

B. Length, height, width: Do not deviate by more than plus or minus 1/8 inch from approved dimensions. These requirements do not apply to split faced units.

2.10 PRODUCTION QUALITY CONTROL

A. Mix Designs: Test new and existing mix designs for applicable compressive strength and absorption compliance before manufacturing architectural stone units.

B. Plant Production Testing: Tests to be conducted by certified laboratory testing technicians. Test from specimens selected at random from plant production in accordance with ASTM C 140.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine construction to receive architectural stone units. Notify Architect if construction is not acceptable. Do not begin installation until unacceptable conditions have been corrected.

B. Examine architectural stone units before installation. Do not install unacceptable units.

1. Waste: For various reasons due to shipping, handling or the manufacturing process, a small amount of Facestone, Architectural Masonry Veneer Series units may have blemishes or chips and should be used for field cutting for maximum material utilization. When ordering material, please allow for waste (approximately 2 to 3%) and saw cutting in your estimate.

2. All FACESTONE products are shipped on a pallet and have one unfinished side. Textured units are to be set with the texture face forward and smooth units are stacked “face up” on the pallet.

3. Facestone, Architectural Masonry Veneer Series units have an unfinished back, one finished face, and approximately 40 to 60% of the units have one smooth finished end. Architectural machine made split and chiseled faced units can be ordered with a matching finished end upon request.

3.2 INSTALLATION

Specifier Notes: FACESTONE products, like all concrete masonry products, may shrink slightly with the loss of moisture, therefore the use of elastic (control) joints is highly recommended. Refer to NCMA TEK Bulletins 10-1A “Design of Concrete Masonry for Crack Control”, 10-2C “Control Joints for Concrete Masonry Walls - Empirical Method”, 3-6C “Concrete Masonry Veneers”, 10-4 “Crack Control for Concrete Brick and Other Concrete Masonry Veneers”, and 5-2A “Clay and Concrete Masonry Banding Details” for guidelines. Based upon our experiences the use of horizontal joint reinforcement is not required for FACESTONE Architectural Masonry Veneer Units unless the designer wants to reduce or change the location of control joints from industry standards or the seismic category of the region dictates otherwise. Please consult our company engineer from proper control joint placement.

Refer to NCMA TEK Bulletin 3-6C “Concrete Masonry Veneers” for proper veneer anchoring.

You can view NCMA e-TEK bulletins at blogspot.FACESTONE.com

- A. Install units in conjunction with masonry, as specified in Section 04810.
 - B. Pull units from multiple cubes during installation to minimize variation in color and help with natural blending.
 - C. Cut units using motor-driven masonry saws. Finished ends should be turned to the visible side and the saw cut turned to the inside of the mortar joint to hide exposed aggregates and saw marks.
 - D. Do not use pry bars or other equipment in a manner that could damage units.
 - E. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
 - F. Use Type N mortar (ASTM C 270), unless specified otherwise.
 - G. Per ACI 530.1, it is not necessary, nor recommended, to wet the units prior to installation.
 - H. Set units in full bed of mortar, unless otherwise indicated on the drawings.
 - I. Fill vertical joints with mortar.
 - J. Make joints 3/8 inch, unless otherwise indicated on the drawings.
 - K. Tuck point mortar joints to slight concave profile (unless specified otherwise).
 - L. Remove excess mortar immediately.
 - M. Remove mortar fins and smears before tooling joints.
 - N. Cover wainscot for protection with plastic, felt paper or other approved products.
 - O. Cover freshly installed masonry products as required to assist with the curing process.
- P. Sealant Joints:
- 1. As specified in Section 07900.
 - 2. Prime ends of units, insert properly sized backing rod, and install sealant.
 - 3. Provide sealant joints at following locations:
 - a. Joints at relieving angles.
 - b. Control and expansion joints.

c. As indicated on the drawings.

3.3 TOLERANCES

A. Installation Tolerances:

1. Variation from Plumb: Do not exceed 1/8 inch in 5 feet or 1/4 inch in 20 feet or more.
2. Variation from Level: Do not exceed 1/8 inch in 5 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
3. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch or 1/4 of nominal joint width, whichever is greater.
4. Variation in Plane Between Adjacent Surfaces: Do not exceed 1/8-inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.4 CLEANING

- A. Clean exposed units after mortar is thoroughly set and cured.
- B. Perform test of cleaner on small area of 4' x 4' on each type and color and receive approval by Architect before full cleaning. Let test area dry 4 to 5 days before inspection. Keep test area for future comparison.
- C. Clean units by wetting down the surface first, before using the specified cleaner (as specified in Section 2.7.C). Brush on cleaner, let dwell for 2 to 3 minutes. Reapply cleaner, scrub surface with masonry brush and rinse off thoroughly. Areas with heavy soiling use a wood block or non-metallic scraper.
- D. Apply cleaner to units in accordance with cleaner manufacturer's instructions.
- E. Do **not** use the following to clean units:
 1. Muriatic acid.
 2. Power washing.
 3. Sandblasting.
 4. Harsh cleaning materials or methods that would damage or discolor surfaces.

3.5 REPAIR

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
- B. Repair with touchup materials provided by manufacturer in accordance with manufacturer's instructions.
- C. Repair methods and results to be approved by Architect.

3.6 INSPECTION AND ACCEPTANCE

- A. Inspect completed installation in accordance with ACI 530 requirements.

Specifier Notes: Sealer not required for Facestone, Architectural Masonry Veneer Series as an integral water repellent is utilized in the mix design. Delete this article if not required. Consult Reading Facestone for additional information.

3.7 WATER REPELLANT

- A. Sealer: Prosoco Sure Klean Weather Seal Siloxane WB or PD or Hydrozo Enviroseal 7 according to manufacturer's recommendations. Apply water repellent for weatherproofing in accordance with water repellent manufacturer's instructions.
- B. Apply water repellent after installation, cleaning, repair, inspection, and acceptance of units are completed.

3.8 PROTECTION

- A. Protect installed units from splashing, stains, mortar, and other damage.

END OF SECTION