



## Architectural Cast Stone Specification

### 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 04720

CAST STONE (CUSTOM CAST STONE SERIES-wet & dry cast methods)

*Specifier Notes: This section covers Westbrook Concrete Block’s Custom Cast Stone Series (cast stone units).*

Architectural Cast Stone products are uniquely produced masonry product which is a high-density mixture of fine aggregate, limestone, silica sand, and portland cement. It achieves the classic look, texture, and structural integrity of natural limestone, sandstone, granite, and other stone accents. It is able to withstand extreme weathering conditions. Consult Westbrook Concrete Block, (860)399-6201 for assistance in editing this section for the specific application.

### Part 1—General

#### 1.1 SECTION INCLUDES

Custom cast stone (Westbrook Concrete Block’s Custom Cast Stone Series).

#### 1.2 RELATED SECTIONS

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

- » Section 04060—Masonry Mortar.
- » Section 04070—Masonry Grout.
- » Section 04200—Unit Masonry.
- » Section 04220—Unit Masonry Assemblies.
- » Section 04730—Lightweight Stone Masonry Units.
- » 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.*

- » ASTM A 615/A 615M—Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- » ASTM A767/A767M—Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- » ASTM C 33—Concrete Aggregates.
- » ASTM C 150—Portland Cement.
- » ASTM C 173—Air Content of Freshly Mixed Concrete by the Volume Method
- » ASTM C 231—Air Content of Freshly Mixed Concrete by the Pressure Method
- » ASTM C 260—Specification for Air Entrained Admixtures for Concrete
- » ASTM C 270—Mortar for Unit Masonry.
- » ASTM C 426—Linear Drying Shrinkage of Concrete Masonry Units.
- » ASTM C 494—Chemical Admixtures for Concrete.
- » ASTM C 979—Pigments for Integrally Colored Concrete.
- » ASTM C 1194—Compressive Strength of Architectural Cast Stone.
- » ASTM C 1195—Absorption of Architectural Cast Stone.
- » ASTM C 1364—Architectural Cast Stone.
- » Cast Stone Institute Technical Manual (Current Edition).
- » ACI 530 “Building Code Requirements for Masonry Structures”

### 1.4 DEFINITIONS

#### **Cast Stone:**

An architectural stone unit manufactured to copy fine grain texture and color of natural cut stone used in unit masonry applications. Meets ASTM C 1364 requirements.

#### **Dry Cast Concrete Products:**

Manufactured from zero-slump concrete.

- » Vibrant Dry Hand Tamp Casting Method: Vibratory compaction by hand tamp of earth-moist, zero-slump concrete against rigid mold until it is densely compacted.

**Wet Cast Concrete Products:** Manufactured from measurable slump concrete.

- » Wet Casting Method: Manufactured from measurable slump concrete and consolidated into a mold.

### 1.5 SUBMITTALS

Comply with Section 01330 - Submittal Procedures.

#### **Product Data:**

Submit manufacturer’s product data.

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

#### **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 cast stone types and location.

#### **Samples:**

Submit pieces of manufacturer’s cast stone units that represent general range of texture and color proposed to be furnished for project.



### 1.6 QUALITY ASSURANCE

*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.*

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

- » Mock-ups shall remain as part of the completed Work.
- » 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

#### Delivery:

- » Deliver cast stone units secured to shipping pallets and protected from damage and discoloration.
- » Provide itemized shipping list.
- » Number each piece individually, as required, to match shop drawings and schedules.

#### Storage:

- » Store cast stone units and installation materials in accordance with manufacturer's instructions.
- » Store cast stone units on pallets with nonstaining, waterproof covers.
- » Do not double stack pallets.
- » Ventilate units under covers to prevent condensation.
- » Prevent contact with dirt and splashing.

#### Handling:

- » Protect cast stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage.
- » Handle long units at center and both ends simultaneously to prevent cracking.
- » 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

Schedule and coordinate production and delivery of cast stone units with unit masonry work.



### Part 2—Products

#### 2.1 MANUFACTURER

Westbrook Concrete Block Co., Inc.

2074 Boston Post Road (860) 399-6201  
Westbrook, CT 06498 www.westbrookblock.com  
info@westbrookblock.com

*Substitutions not permitted.*

#### 2.2 APPROVED DISTRIBUTOR

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

#### 2.3 CAST STONE

**Custom Cast Stone Units:**

Westbrook Concrete Block's Custom Cast Stone Series.

**Compliance:**

ASTM C 1364.

**Casting Method:**

Vibrant dry hand tamp or wet cast as specified and/or required.

**Texture:**

Smooth [As specified].

*Specifier Notes: Specify cast stone color, units, and profiles. Custom color matches are available.  
Consult a Westbrook Concrete Block distributor for additional information and limitations.*

**Color:**

» #57, #71, #111, #125, #155, #303, #320, #323, #439, 1/2 + 1/2, Buff, Wheat, Brown Stone,  
Iron Clad, Dark Buff.

**Curing:**

Cure in enclosed chamber at 100 percent relative humidity and minimum 90 degrees F  
for up to 16 hours and yard cure for a minimum of 3 days.

#### 2.4 CAST STONE MATERIALS

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

**Portland Cement:**

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

**Coarse Aggregates:**

ASTM C 33, except for gradation. Granite, quartz, or limestone.

**Fine Aggregates:**

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

**Pigments:**

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



### Admixtures:

- » Water Reducing, Retarding, and Accelerating Admixtures: ASTM C 494.
- » ASTM C 260 for air-entraining admixtures
- » Other admixtures: integral water repellants 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.
- » ASTM C 618 for mineral admixtures
- » ASTM C 989 for ground granulated blast-furnace slag

### Water:

Potable.

### Reinforcing Bars:

ASTM A 615, deformed steel bars. Epoxy coated or galvanized when covered with less than 1-1/2 inches of material.

- » Galvanized Coating: ASTM A 767.

## 2.5 TEXTURE AND COLOR

### General:

Match texture and color of full-size sample on file with Architect.

### Texture of Surfaces Exposed to View:

- » Fine-grained texture similar to natural stone.
- » Approximately equal to approved sample when viewed in direct daylight at 10 feet.

### Surface Air Voids:

- » Size: Maximum 1/32 inch.
- » Density: Less than 3 occurrences per any 1 square inch.
- » Viewing Conditions: Not obvious under direct daylight at 10 feet.

### Finish:

- » Minor chipping resulting from shipping and delivery shall not be grounds for rejection of units.
- » Minor chips shall not be obvious under direct daylight at 20 feet, as determined by Architect.
- » The occurrence of crazing or efflorescence shall not constitute a cause for rejection.

### Color Variation:

- » Viewing Conditions: Compare in direct daylight at 10 feet, between units of similar age, subjected to similar weathering conditions.
- » Total Color Difference: ASTM C 1364, 6 units
- » Hue Difference: ASTM C 1364, 2 units

## 2.6 MORTAR

*Specifier Notes: Edit the following two sentences as required.*

### Mortar:

[ASTM C270, Type N mortar by Westbrook Concrete Block] [As specified in Section 04060]  
[As specified in Section 04200] [As specified in Section 04220].

### 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.

Westbrook Concrete Block does not supply anchoring hardware for Architectural Cast Stone products, but will assist in specifying anchors for a specific application.

» **Anchors:**

Non-corrosive type, sized for conditions. [Brass] [Hot-dip galvanized steel]  
[Type 304 stainless steel]

» **Sealant:**

As specified in Section 07900.

*Specifier Notes: When the project includes both brick and Architectural Cast Stone products, specify Prosoco Sure Klean® 600 Detergent, Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean Vana Trol, Light Duty Cleaner (for dark units). Consult Westbrook Concrete Block for additional information.*

» **Cleaner:**

Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean 600 Detergent  
Prosoco Sure Klean Vana Trol, Prosoco Light Duty Cleaner\*.

*\*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

**Shapes:**

Unless otherwise indicated on drawings, provide:

- » Suitable wash on exterior sills, copings, projecting courses, and units with exposed top surfaces.
- » Drips on projecting units, wherever possible.

### 2.9 TOLERANCES

**General:**

Manufacture cast stone and concrete masonry veneer units within tolerances in accordance with Cast Stone Institute Technical Manual, unless otherwise specified.

**Cross Section Dimensions:**

Do not deviate by more than plus or minus 1/8 inch from approved dimensions.

**Length of Units:**

Do not deviate by more than length/360 or plus or minus 1/8 inch, whichever is greater, not to exceed plus or minus 1/4 inch.

**Warp, Bow, or Twist:**

Do not exceed length/360 or plus or minus 1/8 inch, whichever is greater.

### 2.10 PRODUCTION QUALITY CONTROL

**Mix Designs:**

Test new and existing mix designs for applicable compressive strength and absorption compliance before manufacturing cast stone units.

**Plant Production Testing:**

Test compressive strength and absorption from specimens selected at random from plant production. Tests to be conducted by certified laboratory testing technicians.

- » Custom Cast Stone Units: Test in accordance with ASTM C 1194 and C 1195.



### Part 3—Execution

#### 3.1 EXAMINATION

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

Examine cast stone units before installation. Do not install unacceptable units. If unacceptable units are installed, replacement of stones and all costs associated are the responsibility of the installer.

- » All Architectural Cast Stone 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.
- » Westbrook Concrete Block’s Custom Cast Stone Series units do not have returns or finished ends unless otherwise ordered and noted on the shop drawings.

#### 3.2 INSTALLATION

*Specifier Notes: Architectural Cast Stone 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”, 10-4 “Crack Control for Concrete Brick and Other Concrete Masonry Veneers”, and 5-2A “Clay and Concrete Masonry Banding Details” for guidelines.*

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

You can view NCMA e-TEK bulletins at [www.westbrookblock.com](http://www.westbrookblock.com)

- » Install units in conjunction with masonry, as specified in Section 04810.
- » Pull units from multiple cubes during installation to minimize variation in color and help with natural blending.
- » 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.
- » Do not use pry bars or other equipment in a manner that could damage units.
- » Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
- » Use Westbrook Concrete Block Type N mortar (ASTM C270). Westbrook Concrete Block Type S is also acceptable.
- » Per ACI 530.1, it is not necessary, nor recommended, to wet the units prior to installation.
- » Set units in full bed of mortar, unless otherwise indicated on the drawings. It is not necessary to rake joints for later tuckpointing. Standard full mortar application with tooling is all that is necessary.
- » Fill vertical joints with mortar.
- » Leave head joints in copings and similar components open for sealant.
- » Make joints  $\frac{3}{8}$  inch, unless otherwise indicated on the drawings.
- » Mortar joints should have a slight concave profile (unless specified otherwise).
- » Remove excess mortar immediately.
- » Remove mortar fins and smears before tooling joints.
- » Cover wainscot for protection and bond separation with plastic, felt paper or other approved products.



- » Cover freshly installed masonry products as required to assist with the curing process.
- » Sealant Joints:
  - » As specified in Section 07900.
  - » Prime ends of units, insert properly sized backing rod, and install sealant.
  - » Provide sealant joints at following locations:
    - » Copings and cast stone units with exposed tops.
    - » Joints at relieving angles.
    - » Control and expansion joints.
    - » As indicated on the drawings.

### 3.3 TOLERANCES

#### Installation Tolerances:

- » Variation from Plumb: Do not exceed 1/8 inch in 5 feet or 1/4 inch in 20 feet or more.
- » Variation from Level: Do not exceed 1/8 inch in 5 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
- » Variation in Joint Width: Do not vary joint thickness more than 1/8 inch or 1/4 of nominal joint width, whichever is greater.
- » 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

- » Clean exposed units after mortar is thoroughly set and cured.
- » 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.
- » 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.
- » Apply cleaner to units in accordance with cleaner manufacturer's instructions.
- » Do not use the following to clean units:
  - » Muriatic acid.
  - » Power washing.
  - » Sandblasting.
  - » Harsh cleaning materials or methods that would damage or discolor surfaces.

### 3.5 REPAIR

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





### 3.6 INSPECTION AND ACCEPTANCE

- » Inspect completed installation in accordance with Cast Stone Institute Technical Manual.

*Specifier Notes: Westbrook Concrete Block's Custom Cast Stone Series products incorporate an integral water repellent in the mix design. Delete this article if not required. Consult Westbrook Concrete Block for additional information.*

### 3.7 WATER REPELLANT

#### Sealer:

Prosoco Sure Klean Weather Seal Siloxane WB according to manufacturer's recommendations. Apply water repellent for weatherproofing in accordance with water repellent manufacturer's instructions.

Apply water repellent after installation, cleaning, repair, inspection, and acceptance of units are completed.

### 3.8 PROTECTION

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