

**SECTION 04-72-00**

**CGA Stoneworks  
Standard Specifications**

**ARCHITECTURAL CAST STONE  
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**1. PART 1-GENERAL**

**1.1. SECTION INCLUDES** - Architectural Cast Stone.

- A. Scope - All labor, materials and equipment to provide the Cast Stone shown on architectural drawings and as described in this specification.
  - 1. Manufacturer shall furnish Cast Stone covered by this specification.
  - 2. Installing contractor shall unload, store, furnish all anchors, set, patch, clean and seal (optional) the Cast Stone as required.

**1.2. RELATED SECTIONS**

- A. Section .013300 – Submittal Procedures.
- B. Section 034500 – Precast Architectural Concrete
- C. Section 034900 – Glass Fiber Reinforced Concrete (GFRC)
- D. Section .040513 – Masonry Mortaring.
- E. Section .040516 – Masonry Grouting.
- F. Section .040519 – Masonry Anchorage and Reinforcing.
- G. Section 042020 – Unit Masonry.
- H. Section .079000 – Joint Protection.

**1.3. REFERENCES**

- A. ACI 318— Building Code Requirements for Reinforced Concrete.
- B. ASTM A 185 -Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
- C. ASTM A 615/A 615M -Standard Specification for Deformed and Plain Billet-Steel Bars for Reinforced Concrete.
- D. ASTM C 33 -Standard Specification for Concrete Aggregates.

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- E. ASTM C 150 - Standard Specification for Portland Cement.
- F. ASTM C 173 – Standard Specification for Air Content of Freshly Mixed Concrete by Volume Method.
- G. ASTM C 231 – Standard Specification for Air Content of Freshly Mixed Concrete by Pressure Method.
- H. ASTM C 260 – Standard Specification for Air-Entrained Admixtures for Concrete.
- I. ASTM C 270 – Standard Specification for Mortar for Unit Masonry.
- J. ASTM C 494/C 494M – Standard Specification for Chemical Admixtures for Concrete.
- K. ASTM C 642 – Standard Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete.
- L. ASTM C 666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
- M. ASTM C 979 - Standard Specification for Coloring Pigments for Integrally Pigmented Concrete.
- N. ASTM C 989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete.
- O. ASTM C 1194 - Standard Test Method for Compressive Strength of Architectural Cast Stone.
- P. ASTM C 1195 - Standard Test Method for Absorption of Architectural Cast Stone.
- Q. ASTM C 1364 - Standard Specification for Architectural Cast Stone.
- R. ASTM D 2244 - Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- S. Cast Stone Institute Technical Manual (Current Edition)

### 1.4. DEFINITIONS

- A. Cast Stone – a refined architectural precast concrete building unit manufactured to simulate natural cut stone, used in Division 4 masonry applications.
  - a. Wet Cast – manufactured from measurable slump concrete and vibrated into mold until it becomes densely consolidated.

### 1.5. SUBMITTALS

- A. Comply with Section 013300 — Submittal Procedures.
- B. Samples: Submit pieces of Cast Stone that are representative of the general range of finish and color proposed to be furnished for the project.

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- C. Test Results: Submit manufacturers test results of cast stone previously made by manufacturer.
- D. Shop Drawings: Submit manufacturers Shop Drawings including profiles, cross-sections, reinforcement, exposed faces, arrangement of joints (optional for standard or semi-custom installations), anchoring methods, anchors (if required), annotation of stone types and their location.
- E. Mockup Samples: Furnish sample units as indicated on Drawings for installation in mockups.
- F. Quality-Control Plan: Submit Manufacturer's written Quality Control Program.

### 1.6. QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - a. Manufacturer shall have sufficient plant facilities to produce the shapes, quantities, and size of Cast Stone required in accordance with the project schedule.
  - b. Manufacturer shall submit a written list of projects similar in scope and at least three (3) years of age, along with Owner, Architect, and Contractor references.
- B. Standards: Comply with the requirements of the ASTM 1364, Cast Stone Institute Technical Manual, and the project specifications. In instances of conflict, the contract documents shall prevail.
- C. Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 for testing indicated, as documented according to ASTM E 548.
- D. Source Limitations for Cast Stone: Obtain Cast Stone units of each required color and texture through one source from a single manufacturer.
- E. Source Limitations for Mortar Materials: Obtain mortar ingredients for each required color and texture of mortar a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.
- F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and

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installation.

### 7. PROJECT CONDITIONS

- A. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

## 2. PART 2- PRODUCTS

### 2.1. MANUFACTURERS

- A. Acceptable Manufacturer:  
CGA Stone Casting, LLC  
101 Benoist Farms Rd  
West Palm Beach, FL 33411  
Tel: (561) 798-8486 Fax: (561) 795-8707  
Toll-Free: 866-844-2508  
Email: [sales@cgastoneworks.com](mailto:sales@cgastoneworks.com)  
Website: [www.cgastoneworks.com](http://www.cgastoneworks.com)
- B. Substitutions: Not Permitted
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.1. ARCHITECTURAL CAST STONE

- A. Comply with ASTM C 1364
- B. Physical properties: Provide the following:
  - 1. Compressive Strength -ASTM C 1194: 6,500 psi (45 Mpa) minimum for products at 28 days.
  - 2. Absorption -ASTM C 1195: 6% maximum by the cold water method, or 10% maximum by the boiling method for products at 28 days.
  - 3. Air Content -ASTM C 173 or C 231, for wet cast product shall be 4-6% for units used in a freeze-thaw environment.

### 2.2. RAW MATERIALS

- A. Portland cement – ASTM C 150, Type I, white.

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- B. Coarse Aggregates – ASTM C 33, Granite, quartz or limestone; except for gradation as needed to produce required textures and colors.
- C. Fine Aggregates – ASTM C 33, Manufactured or natural sands; except for gradation as needed to produce required textures and colors.
- D. Colors – Inorganic iron oxide pigments, ASTM C 979.
- E. Admixtures- Comply with the following:
  - 1. ASTM C 494 for water reducing, retarding or accelerating admixtures.
  - 2. ASTM C 260 – for Air-Entrained Admixtures for Concrete.
  - 3. 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.
  - 4. ASTM C 618 mineral admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
  - 5. Water—Potable
- F. Reinforcing bars:
  - 1. ASTM A 615/A 615M. Galvanized or epoxy coated when cover is less than 1-1/2 inches (37 mm).
- G. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A 240/A240M, ASTM A 276, or ASTM A666, Type 316.

### 2.3. COLOR AND FINISH

- A. Supply color & texture samples to Architect for review and approval.
- B. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 10 ft (3 m) distance.
  - 1. ASTM D 2244 permissible variation in color between units of comparable age subjected to similar weathering exposure.
    - a. Total color difference –not greater than 6 units.
    - b. Total hue difference –not greater than 2 units.
- C. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20-ft (6 m) distance.
- D. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
- E. Remove cement film, if required, from exposed surfaces prior to packaging for

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shipment.

### 2.4. REINFORCING

- A. Units requiring internal reinforcing shall be reinforced with reinforcing bars at the manufacturing facility, and in accordance with ASTM A615.

### 2.5. CURING

- A. Units are cured for approximately 18 hours, or yard cure for 350 degree days (i.e. 7 days @ 50°F (10°C) or 5 days @ 70°F (21°C)) prior to shipping.

### 2.6. MANUFACTURING TOLERANCES

- A. Provide Cast Stone units complying with ASTM C1364 using the wet cast method.
- B. Fabricate units with sharp arris and details accurately reproduced with indicated texture on all exposed surfaces, unless otherwise indicated.
  - a. Slope exposed horizontal surfaces 1:12, unless otherwise indicated
  - b. Provide raised fillets at backs of sills and ends indicated to be built into jambs.
  - c. Provide drips on projected elements, unless otherwise indicated.
- C. Cross-section dimensions shall not deviate by more than  $\pm 1/8$  inch (3 mm) from approved dimensions.
- D. Length of units shall not deviate by more than length/ 360 or  $\pm 1/8$  inch (3 mm), whichever is greater, not to exceed  $\pm 1/4$  inch (6 mm).
  - 1. Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed by the manufacturer.
- E. Warp, bow or twist of units shall not exceed length/ 360 or  $\pm 1/8$  inch (3 mm), whichever is greater.
- F. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features - On formed sides of unit, 1/8 inch (3 mm), on unformed sides of unit, 3/8 inch (9 mm) maximum deviation.

### 2.7. PRODUCTION QUALITY CONTROL

- A. Testing.
  - 1. Test compressive strength and absorption from specimens taken from every 500 cubic feet of product produced.

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2. Perform tests in accordance with ASTM C 1194 and C 1195.
3. Have tests performed by an independent laboratory every six months.
4. New and existing mix designs shall be tested for strength and absorption compliance prior to producing units.

### 2.8. DELIVERY, STORAGE AND HANDLING

- A. Mark production units with identification marks as shown on the shop drawings.
- B. Package units prior to shipping in order to protect them from staining, or damage during shipping and storage.
- C. Provide an itemized list of product to support the bill of lading.

## 3. PART 3- EXECUTION

### 3.1. EXAMINATION

- A. Installing contractor shall check Cast Stone materials for fit and finish prior to installation. Do not set unacceptable units.

### 3.2. SETTING TOLERANCES

- A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
- B. Variation from Level: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.
- D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch, except due to warpage of units within tolerances specified.

### 3.3. JOINTING

- A. Joint size:
  1. At stone/brick joints 3/8 inch (9.5 cm).
  2. At stone/stone joints in vertical position 1/4 inch (6 mm) (3/8 inch (9.5 mm) optional).
  3. Stone/stone joints exposed on top 3/8 inch (9.5 mm).
- B. Joint materials:

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1. Mortar, type N, ASTM C 270.
2. Use a full bed of mortar at all bed joints.
3. Flush vertical joints full with mortar.
4. Leave all joints with exposed tops or under relieving angles open for sealant.
5. Leave head joints in copings and projecting components open for sealant.

### C. Location of joints:

1. As shown on shop drawings.
2. At control and expansion joints unless otherwise shown.

### 3.4. SETTING

1. Drench units with clean water prior to setting.
2. Fill dowel holes and anchor slots completely with mortar or nonshrink grout.
3. Set units in full bed of mortar, unless otherwise detailed.
4. Rake mortar joints  $\frac{3}{4}$  (18 mm) inch for pointing.
5. Remove excess mortar from unit faces immediately after setting.
6. Tuck point unit joints to a slight concave profile.

### 3.5. JOINT SEALANT

- A. Comply with requirements of Section 07920.
- B. Prime ends of units, insert properly sized backing rod and install required sealant.

### 3.6. REPAIR AND CLEANING

- A. Repair chips with touchup materials furnished by manufacturer.
- B. Saturate units to be cleaned prior to applying an approved masonry cleaner.
- C. Consult with manufacturer for appropriate cleaners.

### 3.7. INSPECTION AND ACCEPTANCE

- A. Inspect finished installation according to Cast Stone Institute Technical Bulletin #36.
- B. Do not field apply water repellent until repair, cleaning, inspection and acceptance is completed.



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END OF SECTION