

SECTION 04720

CAST STONE

PART GENERAL

SECTION INCLUDES

Customized cast stone components for installation in masonry.

Anchors and accessories.

RELATED SECTIONS

Section 04065 - Mortar and Masonry Grout.

Section 04810 - Unit Masonry Assemblies.

Section 04820 - Reinforced Unit Masonry Assemblies.

Section 07900 - Joint Sealers.

REFERENCES

ACI 318 - Building Code Requirements for Reinforced Concrete; American Concrete Institute.

ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

ASTM C 33 - Standard Specification for Concrete Aggregates.

ASTM C 150 - Standard Specification for Portland Cement.

ASTM C 270 - Standard Specification for Mortar for Unit Masonry.

ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.

ASTM C 642 - Standard Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete.

ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.

ASTM C 1194 - Standard Test Method for Compressive Strength of Architectural Cast Stone.

ASTM C 1195 - Standard Test Method for Absorption of Architectural Cast Stone.

ASTM D 2244 - Standard Test Method for Calculation of Color Differences From Instrumentally Measured Color Coordinates.

Technical Manual; Cast Stone Institute.

SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Test results of cast stone components made previously by the manufacturer.

Shop Drawings: Include profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, annotation of components, and their locations in project.

Verification Samples: Pieces of actual cast stone components not less than 1 ft (305 mm) in length, illustrating range of color and texture to be anticipated in components furnished for the project.

QUALITY ASSURANCE

Manufacturer Qualifications: A current producer member of the Cast Stone Institute, with a minimum of five years of experience in producing cast stone of the types required for this project.

Plant must have adequate capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the Work.

Products previously produced by plant and exposed to weather must exhibit satisfactory appearance.

Standards: Comply with requirements of current edition of Cast Stone Institute Technical Manual.

Mock-Up: Provide full size cast stone components for installation in mock-up of exterior wall. Approved mock-up will become standard for appearance and workmanship.

Mock-up may remain as part of the completed Work.

Mock-up may not remain as part of the completed Work; at Architect's direction, demolish mock-up and remove debris from project site.

DELIVERY, STORAGE, AND HANDLING

Delivery: Deliver cast stone components secured to shipping pallets and protected from damage and discoloration.

Storage and Handling: Store cast stone components on project site to prevent contact with earth. Handle carefully to avoid chipping and cracking.

PART PRODUCTS

MANUFACTURERS

Provide cast stone components fabricated by Continental Cast Stone Manufacturing, Inc.; Shawnee, Kansas 66227. ASD. Telephone 913-422-7575.

Requests for substitutions will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

CAST STONE COMPONENTS

Provide cast stone components with the following properties:

Compressive strength: 6500 psi (44.8 Mpa) minimum at 28 days, per ASTM C 1194.

Absorption: 6 percent maximum at 28 days, per ASTM C 1195 or ASTM C 642.

Surface Texture: Fine grained, similar to natural stone. No bugholes or air voids are permitted.

Color and Finish: Match sample on file at Architect's office.

Viewing conditions: Compare in direct daylight at 10 feet (3 m), after subjecting to similar aging and weathering conditions.

Maximum variation: 2 percent hue and 6 percent lightness, chroma, and hue combined; test in accordance with ASTM D 2244.

MATERIALS

Portland Cement: ASTM C 150, Type I or Type III, white or gray as required to match Architect's sample.

Coarse Aggregate: ASTM C 33, except for gradation; granite, quartz, or limestone.

Fine Aggregate: ASTM C 33, except for gradation; natural or manufactured sands.

Pigments: ASTM C 979, inorganic iron oxides.

Admixtures: ASTM C 494.

Water: Potable.

Reinforcing Bars: ASTM A 615/A 615M, galvanized or epoxy coated when covered by less than 1-1/2 inch (38 mm) of cast stone material.

ACCESSORY PRODUCTS

Anchors: Non-corrosive type, sized for conditions. Provide of brass, hot-dip galvanized steel, or Type 304 stainless steel.

Mortar: ASTM C 270, Type N.

Mortar: As specified in Section 04065.

Sealant: As specified in Section 07900.

FABRICATION

Shapes: Unless otherwise indicated on drawings, provide: suitable wash on exterior sills, copings, projecting courses, and components with exposed top surfaces. drips on projecting components.

Reinforcement: Provide reinforcement as required to withstand handling and structural stresses.

Comply with ACI 318.

Provide reinforcement of not less than 1/4 of one percent of cross section area.

Curing and Finishing:

Cure components with a direct fired steam generator

at a minimum temperature of 105 degrees F (41 degrees C) for a minimum of 6 hours, within 12 hours of fabrication.

Cure components in the presence of carbon monoxide and carbon dioxide to promote carbonation at the surface, for efflorescence control.

Remove cement film from exposed surfaces prior to packaging for shipment.

Tolerances: Fabricate cast stone components within the following tolerances:

Plus or minus 1/8 inch in all dimensions.

Maximum bow, camber, or twist: length/360.

Testing: Test compressive strength and absorption of specimens selected at random from plant production.

Test in accordance with referenced testing standards.

Select samples at rate of three per 500 cubic feet, but not less than three.

PART EXECUTION

INSTALLATION

General: Install cast stone components in conjunction with masonry, complying with requirements of Section 04810.

Setting:

Drench cast stone components with clear, running water immediately prior to installation.

Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

Set cast stone components in a full bed of mortar unless otherwise detailed.

Fill vertical joints with mortar.

Make all joints 3/8 inch (9.5 mm), except as otherwise detailed.

Leave head joints in copings and similar components open for sealant.

Rake mortar joints 3/4 inch (19 mm) for pointing.

Sponge the face of each stone to remove excess mortar.

Tuck point joints to a slight concave profile.

Sealant Joints:

Comply with requirements of Section 07900.

Prime the ends of cast stone components, insert

properly sized foam backing rod, and install sealant using sealant gun.

Provide sealant joints at the following locations and as otherwise detailed:

Cast stone components with exposed tops.

Joints under relieving angles.

At control and expansion joints.

TOLERANCES

Comply with requirements of Cast Stone Institute Technical Manual.

Set cast stone components within 1/8 inch (3.2 mm) of plane of adjacent component.

Make joints consistent within tolerance of plus 1/16 inch (1.6 mm) and minus 1/8 inch (3.2 mm).

ADJUSTING, CLEANING, AND PROTECTION

Repair obvious chips with matching touchup material provided by the manufacturer.

Clean cast stone components by wetting with clear running water.

Apply a solution of Sure Clean 600 by ProSoCo Products, Inc. or equivalent, complying with manufacturer's instructions.

Protect cast stone components from splashing and from damage by other operations at the project site.

END OF SECTION