APA Cast Stone Specification

PART 1 - GENERAL

1.01 SCOPE

A. All labor, materials and equipment to provide the Cast Stone shown on architectural drawings and as described in this specification.

B. Manufacturer shall furnish and deliver Cast Stone covered by this specification.

C. Setting contractor shall unload, store, furnish all anchors and set Cast Stone.

1.02 QUALITY ASSURANCE

A. Qualification of manufacturer: Any producer member of the Architectural Precast Association is acceptable.

B. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
1. ASTM C 150 - Specification for Portland Cement
2. ASTM C 33 - Specification for Concrete Aggregates
3. ASTM C 979 - Specification for Coloring Pigments for Integrally Pigmented Concrete
4. ASTM C 494 - Specification for Concrete Admixtures
5. ASTM A 615 - Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
6. ASTM C 1194 - Tested Method for Compressive Strength of Architectural Cast Stone.
7. ASTM C 1195 - Test Method for Absorption of Architectural Cast Stone
8. ASTM C 642 - Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete
9. ASTM C 39 - Test Method for Compressive Strength of Concrete Cylinders.
10. ASTM D 2244 - Test Method for Calculation of Color Differences From Instrumentally Measured Color coordinates.
11. ASTM C 1364-97 - Standard specification for Architectural Cast Stone.

C. Testing: Testing Three specimens per 500 cubic feet at random from plant production in accordance with referenced standards.

1.03 SUBMITTALS

A. Submit for approval the following:
1. Samples of the Cast Stone Specified which will be representative of the general range of color and finish to be furnished.
2. Test results of Cast Stone previously made by the manufacturer.

B. Shop Drawings: Submit for approval the following:
1. Copies of shop drawings showing details of the stone to be provided including: profiles, cross-sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, annotation of stone types and their location.
2. Unless otherwise shown on contract drawings:
   a. Provide suitable wash on all exteriors sills, coping, projecting courses and pieces with exposed top surfaces.
   b. Provide drips as needed.

1.04 MOCK-UP (Optional)

1. Provide full size unit(s) for use in construction of sample wall. The mock-up becomes the standard of workmanship for the project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Architectural Cast Stone.
1. Physical properties: Provide the following:
a. Compressive Strength, ASTM C 1194: 6500 psi min. for products at 28 days. or;
b. Absorption, ASTM C 1195 : less than 6% max. for products at 28 days.
2. Raw Materials:
a. Portland cement - Type I or III, white and/or gray, ASTM C 150
b. Coarse aggregates - Granite, quartz or limestone, ASTM C 33
c. Fine aggregates - Manufactured or natural sands, ASTM C 33
d. Colors - Inorganic iron oxide pigments, ASTM C 979
e. Admixtures - ASTMC 494
f. Water - potable

2.02 COLOR AND FINISH

A. Match sample on file in architect's office.
B. Exposed surfaces, unless otherwise specified, shall exhibit a fine grained texture similar to natural stone. No bugholes or air voids will be permitted.
C. Variation:
1. Must match color and finish of approved sample subjected to similar aging and weathering conditions when viewed in direct daylight at a 10 foot distance.
2. ASTM color variation allowed - 2%, hue: 6% lightness, chroma and hue combined.

2.03 CURING AND FINISHING

A. Cure units in a warm, moist curing chamber at 95% relative humidity for 24 hours, or yard cure for 350 degree-days (i.e. 7days @ 50F or 5 days @ 70F) prior to packaging for shipment.

2.04 REINFORCING

A. New billet steel reinforcing bars - ASTM A 615
1. Reinforce units when necessary for safe handling and structural stress.
2. Reinforcement shall be galvanized or epoxy coated when covered with less than 1-1/2" of material.
3. Area of reinforcement in panels shall be not less than 1/4 percent of the cross section area.

2.05 RELATED MATERIALS

A. Anchors - non-corrosive: galvanized, brass or stainless steel type 304.
B. Mortar - Type N, ASTM C 270.

Part 3 - EXECUTION

3.01 TOLERANCES

A. Comply with Cast Stone Institute Technical Manual (current edition).
B. Set stones 1/8" or less, within plane of adjacent unit.
C. Joints, +1/16", -1/8".

3.02 JOINTING

A. Joint Size:
1. At stone/brick joints - 3/8"
2. At stone/stone joints in vertical position - 1/4" (3/8" optional)

3. Stone/stone joints exposed on top side - 3/8"
B. Joint material:
1. Use a full bed of mortar at all bed joints.
2. Flush vertical joints full with mortar.
3. Leave all joints with exposed tops or under relieving angles open for sealant.
C. Location of joints:
1. As shown on approved shop drawings.
2. Unless otherwise shown: at control and expansion joints per plans.

3.03 SETTING

A. Drench stones with clear, running water just prior to setting.
B. Fill all dowel holes and anchor slots completely with mortar or non-shrink grout.
C. Set all stones in a full bed of mortar. Leave head joints in coping and similar stones open for sealant.
D. Rake mortar joints3/4" for pointing. Sponge the face of each stone to remove excess mortar.
E. Tuck point stone joints to a slight concave.
F. Sealant joints - Prime the ends of stones, insert properly sized foam backup rod and gun-in sealant.
G. Protect stone while on ground (and after setting) from splashing, mortar and damage from other trades.

3.04 CLEANING AND REPAIR

A. .Clean stone by wetting with clear running water and applying a solution of acidic detergent recommended by the manufacturer.
B. Repair obvious chips with touchup material furnished by the manufacturer.

3.05 INSPECTION AND ACCEPTANCE

A. Crazing is not cause for rejection.
B. Efflorescence is not cause for rejection.
C. CSI Technical Bulletin #36