Cast Stone
Standard Specifications

PART 1 - GENERAL

1.01 SCOPE

1. All labor, materials and equipment to provide the Cast Stone shown on architectural drawings and as described in this specification.
2. Manufacturer shall furnish and deliver Cast Stone covered by this specification.
3. Setting contractor shall unload, store, furnish all anchors, set and clean Cast Stone.

1.02 QUALITY ASSURANCE

1. Manufacturer: Must have sufficient experience and facilities to produce the shapes, quantities and size of Cast Stone required in accordance with the project schedule.
2. Stone setter: Must have sufficient experience setting cast or natural building stone.
3. 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 - Specifications for Concrete Aggegates.
    3. ASTM C 979 - Specification for Pigments for Integrally Colored Concrete.
    4. ASTM C 494 - Specification for Chemical Admixtures for Concrete.
    5. ASTM A 615 - Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
    6. ASTM C 1194 - Test method for Compressive Strength of Architectural Cast Stone.
    7. ASTM C 1195 - Test method for Absorption of Architectural Cast Stone.
    8. ASTM C 1364 - Standard Specification for Architectural Cast Stone.
    9. ASTM D 2244 - Test Method for Calculation of Color Differences From Instrumentally Measured Color Coordinates.
    10. ASTM C 666 - Test Method for Resistance of Concrete to Rapid Freezing and Thawing.

4. Testing: Test three specimens per 500 cubic feet at random from job site or from plant production for compressive strength and absorption in accordance with referenced standards.

1.03 SUBMITTALS

1. 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. 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 (optional for semi-custom installation), anchoring methods, anchors, annotation of stone types and their location.
    3. Unless otherwise shown on contract drawings:
        1. Provide suitable wash (slope) on all exterior sills, coping, projecting courses and pieces with exposed top surfaces.
        2. Provide drips as specified.

PART 2 - PRODUCTS

2.01 MATERIALS

1. Physical properties: Provide the following:
    1. Compressive Strength, ASTM C 1194: 4,000 to 6,000 psi.
    2. Absorption, ASTM C 1195: 6% max.

2. Raw Materials
    1. Portland cement - Type I or III, white and/or grey, ASTM C 150
    2. Coarse aggregates - Granite, quartz or limestone, ASTM C 33
    3. Fine aggregates - Manufactured or natural sands, ASTM C 33
    4. Colors - Inorganic iron oxide pigments, ASTM C 979
    5. Admixtures - ASTM C 494
    6. Water - potable.
    7. Reinforcement - ASTM A 615

2.02 ACCEPTABLE MANUFACTURERS
1. CDS Building Specialties, Inc., Fort Myers, FL

2.03 FABRICATION METHODS ALLOWED
1. Use Forged Stone, often as a Vibrant-Tamp placement method. Using a zero slump mixture to achieve desired appearance and physical properties. Placement of a zero slump material hammered into a rigid form will increase density, durability, and create a surface texture found in quarried limestone surface.
2. For certain colors, textures, or other requirement manufacturer may substitute placement techniques but only after samples are approved. The placement method can radically change the finish appearance. Again samples must be submitted for approval.
3. Tooling the stone is required ridding it from seams found in most molded products.

2.04 COLOR AND FINISH
1. Match sample on file in architect's office.
2. Exposed surfaces shall exhibit a fine-grained texture similar to natural stone. No bug-holes or air voids will be permitted.
3. Variation
    1. Must match color and finish of approved sample when viewed in direct daylight at a 10 foot distance.
    2. Color variation allowed - 2%, hue; 6% lightness, chroma and hue combined.

2.05 REINFORCING
1. New billet steel reinforcing bars - ASTM A 615
2. Reinforce units when necessary for safe handling and structural stress.
3. Reinforcement shall be galvanized or epoxy coated when covered with less than 1-1/2" of material. Minimum cover shall be twice the diameter of the bars.
    1. Area of reinforcement in panels greater than 12" wide shall be not less than 1/4 percent of the cross section area when steel is specified.

2.06 CURING AND FINISHING
1. Cure units in a warm, moist curing chamber at 95% relative humidity in enclosed during room under dense fog and water-spray for 16 hours.
2. Yard cure for 350 degree-days (i.e. 7 days @ 50F or 5 days @ 70F) prior to shipment.
3. Acid-etch exposed surfaces to remove cement film is done on site by installer.

2.07 RELATED MATERIALS
1. Anchors - Non-corrosive; galvanized, brass or stainless steel type 304. Fasteners shall be rated for the intended requirements.
2. Mortar - Type N, ASTM C 270 For integrity of the structure the mortar should never exceed the PSI of the stone, forming a gasket allowing for normal expansion and contraction.
3. Alternate adhesives for the protection of the mortar will be specified if approved.

PART 3 - EXECUTION

3.01 TOLERANCES
1. Set stones 1/8" within plane of adjacent unit.
2. Joints, +1/8", -1/8".

3.02 JOINTING
1. Joint size

1. Exterior
    1. At stone/brick joints - 3/8”.
    2. At stone/stone joints in vertical position - 3/8”.
    3. Stone/stone joints exposed on topside - 3/8”.

2. Interior (Fireplace Surrounds)
    1. At stone/brick joints - 1/4”.
    2. At stone/stone joints in vertical position - 1/4”.
    3. Stone/stone joints exposed on topside - 1/4”.

2. Joint material
    1. Use a full bed of mortar at all bed joints.
    2. Flush vertical joints full with mortar.
    3. Only when applying addhessive sealant specified, leave mortar recessed slightly.

3. Location of joints
    1. As shown on approved shop drawings.

3.03 SETTING

1. Drench stones with clear, running water just prior to setting to enhance cappilary action.
2. Fill all dowel holes and anchor slots completely with mortar or non-shrink grout.
3. Set all stones in a full bed of mortar. Leave head joints in coping and similar stones open for sealant.
4. Rake mortar joints 3/4” for pointing.
5. Sponge the face of each stone to remove excess mortar.
6. Tuck point stone joints to a slight concave, raked, or flush as specified. In the absence of a specification default to a flush pointing.
7. Protect stone while on ground (and after setting) from splashing, mortar and damage from other trades.

3.04 CLEANING AND REPAIR

1. Clean stone by wetting with clear running water and applying a solution of “Sure Kleen #600” by ProSoCo Products, Inc. or equal.
2. Repair obvious chips with touchup material furnished by the manufacturer.