**PRODUCT GUIDE SPECIFICATION**

[\* These specifications must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this document with other specification sections and the Drawings. Delete all [\*Specifier Notes\*] after editing. \*]

**SECTION 047200 - CAST STONE MASONRY AND CAST STONE VENEER**

[\* Specifier Notes: This section covers cast stone masonry and stone veneer as manufactured by Cornerstone Architectural Products LLC. Cast stone masonry and veneer is a highly refined architectural precast concrete product manufactured from earth-moist concrete to simulate natural cut stone. New England Veneer Stone is the brand of man-made stone veneer that is manufactured by Cornerstone Architectural Products. \*]

This casting method uses carefully graded aggregates that result in a realistic texture with the absence of holes. This finished product more closely resembles natural cut stone, with improved physical properties.

Consult Cornerstone Architectural Products LLC for assistance in editing this section for the specific application.

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

 A. Cast Stone Masonry and Veneer

**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 masonry. \*]

 A. Section 040513 - Masonry Mortaring

 B Section 040516 - Masonry Grouting

 C. Section 040519 - Masonry Anchorage and Reinforcing

 D. Section 042000 - Unit Masonry

 E. Section 079000 - Joint Protection

**1.3 DEFINITIONS**

 A. Cast Stone Masonry: Highly refined architectural concrete stone product, manufactured to simulate fine-grain texture of natural stone.

**1.4 REFERENCE STANDARDS**

[\* Specifier Notes: List reference standards used elsewhere in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used. \*]

 A. ASTM C 1364 - Standard Specification for Architectural Cast Stone.

 B. ASTM C 1670 - Standard Specification for Architectural Thin Stone Veneer.

**1.5 SUBMITTALS**

 A. Comply with Section 013300 - Submittal Procedures

 B. Product Data: Submit manufacturer's product data.

[\* Specifier Notes: Cornerstone Architectural Products LLC can assist in the design process by providing various degrees of customization, according to the complexity of the project. \*]

 C. Shop Drawings: Submit manufacturer's shop drawings including profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, annotation of components, and their locations in project as indicated on the Drawings.

 D. Verification Samples: Submit sample pieces of actual cast stone components or stone veneer, illustrating range of color and texture to be anticipated in components furnished for project.

 E. Test Results: Submit manufacturer's test results of cast stone components made previously by manufacturer using materials from same sources proposed for use in project.

1.6  **QUALITY ASSURANCE**

 A. Manufacturers Qualifications: Manufacturer has been in the architectural precast business for over 20 years.

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

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

 B. Standards: Unless otherwise specified in this section, cast stone and stone veneer shall comply with the following:

 1. ASTM C 1364

 2. ASTM C 1670

[\* Specifier Notes: Mock-ups are optional and will add expense to the project. Scope of the mock-up construction must be clearly specified or indicated on the Drawings.

Mock-ups allow the Architect to verify:

 1 The color and texture of the cast stone.

 2. The fit of adjacent components.

 3. The quality of construction.

 4. The quality of repair methods, if needed.

Revise the following paragraph as required for the project. Delete if mock-ups are not required.

\* ]

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

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

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

 1. 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**

 A. Delivery:

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

 2. Protect corners from damage.

 3. Number each piece individually to match shop drawings and schedules.

 4. Deliver veneer stone in crates or plastic totes dependent on quantity.

 B. Storage:

 1. Store cast stone components and installation materials in accordance with manufacturer's instructions.

 2. Store cast stone components on pallets with nonstaining, waterproof covers.

 3. Ventilate under covers to prevent condensation.

 4. Prevent contact with dirt.

 C. Handling: Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

[\*Specifier Notes: Revise the following article as required for the project. Delete if not required. \*]

**1.8 SCHEDULING**

 A. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the Work.

**PART 2 PRODUCTS**

**2.1 MANUFACTURER**

 A. Manufacturer: Cornerstone Architectural Products LLC; websites: [www.cornerstoneproductsllc.com](http://www.cornerstoneproductsllc.com) and neveneerstone.com, E-Mail matthew@cornerstoneproductsllc.com.

**2.2 CAST STONE MASONRY AND VENEER**

 A. Cast Stone:

 1. Compressive Strength: ASTM C 1364.

 2. Absorption, Cold Water: ASTM C 1364.

 3. Linear Shrinkage: ASTM C 1364.

 B. Veneer Stone Weight: ASTM C 1670.

 C. Surface Texture: ASTM C 1364.

 D. Color and Finish:

[\* Specifier Notes: Cornerstone Architectural Products LLC can assist in the color selection process by either providing color samples from the wide assortment of existing colors or by custom color matching a color or material chosen by the Architect. Specify one of the following four sentences. \*]

 1. Match sample on file at Architect's office.

[\* Specifier Notes: Insert Cornerstone Cast Stone Masonry color or New England Veneer Stone color or blend.\*]

 1. Cornerstone Architectural Products Cast Stone Masonry Color:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 1. New England Veneer Stone Pattern and Color or Blend:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[\* Specifier Notes: Insert name of brick, natural stone, or other material to be matched. \*]

 1. Match Color:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 D. Permissible Variation in Color:

 1. Total Color Difference: ASTM C 1364, 6 units.

 2. Hue Difference: ASTM C 1364, 2 units.

**2.3 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. \*]

 A. Portland Cement: ASTM C 150, Type I; white or gray as required to match specified color.

 B. Coarse Aggregate: ASTM C 1364; granite, quartz, or limestone.

 C. Fine Aggregate: ASTM C 1364, natural or manufactured sands.

 D. Coloring Pigments: ASTM C 1364, inorganic iron oxides.

 E. Chemical Admixtures: ASTM C 1364.

 F. Water: Potable.

[\* Specifier Notes: Specify galvanized or epoxy-coated steel reinforcing bars when reinforcing is required for safe handling, setting, and structural stress. Does not apply to Veneer Stone. \*]

 G. Reinforcement: Where required by ASTM C 1364, [galvanized steel] [epoxy-coated steel].

**2.4 MORTAR MATERIALS**

[\* Specifier Notes: Specify the mortar. \*]

 A. Mortar: [Cast Stone Institute Standard Specification] [As specified in Section 04 05 13].

**2.5 ACCESSORIES**

[\* Specifier Notes: Specify Type 304 stainless steel anchors for highly corrosive environments, such as coastal areas, and for 100-year type construction.

Anchor pins and dowels should be stainless steel. Shelf angles and other similar structural items should be galvanized steel.

Consult Cornerstone Architectural Products LLC for assistance in specifying anchors for the specific application.\*]

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

 B. Sealants: As specified in Section 079000.

 C. Cleaner:

 1. Manufacturer's standard-strength, general-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces.

 2. Approved for intended use by cast stone masonry manufacturer and approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

**2.6 FABRICATION**

 A. Shapes: Unless otherwise indicated on the Drawings, provide:

 1. Suitable wash on exterior sills, copings, projecting courses, and components with exposed top surfaces.

 2. Drips on projecting components, wherever possible.

 B. Reinforcement:

 1. As required to withstand handling and structural stresses.

 2. Comply with ASTM C 1364.

 3. Minimum of 0.25 percent of cross-sectional area of panels which exceed 24 inches (600 mm) in width.

 4. Minimum Reinforcing Cover: Twice diameter of reinforcing bars.

 5. Units less than 24 inches in either transverse or longitudinal direction may be unreinforced in that direction if structural conditions allow.

 D. Finishing: Remove blemishes from exposed surfaces before packaging for shipment.

 E. Manufacturing Tolerances: Manufacture cast stone components within tolerances in accordance with Cast Stone Institute Standard Specification.

**2.7 SOURCE QUALITY CONTROL**

 A. Sampling and Testing: ASTM C 1364.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

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

 B. Visual Inspection:

 1. Visually inspect cast stone components for fit and finish in accordance with ASTM C 1364 before installation.

 2. Do not install unacceptable components.

**3.2 INSTALLATION**

 A. General: Install cast stone masonry in conjunction with unit masonry, complying with Section 042000.

 B. Setting:

 1. Drench cast stone components with clear, running water immediately before installation.

 2. Do not use pry bars or other equipment in a manner that could damage cast stone components.

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

 4. Set cast stone components in a full bed of mortar, unless otherwise indicated on the Drawings.

 5. Fill vertical joints with mortar.

 6. Make joints 3/8 inch (9 mm), unless otherwise indicated on the Drawings.

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

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

 9. Sponge face of each stone to remove excess mortar.

 10. Tuck point joints to a slight concave profile.

 C. Sealant Joints:

 1. Comply with Section 07 90 00.

 2. Prime ends of cast stone components, insert properly sized foam backing rod, and install required sealant using sealant gun.

 3. Provide sealant joints at following locations and as indicated on the Drawings.

 a. Cast stone components with exposed tops.

 b. Joints at relieving angles.

 c. Control and expansion joints.

**3.3 SETTING TOLERANCES**

 A. Tolerances: Comply with Cast Stone Institute Standard Specification.

 1. Variation from Plumb: Do not exceed 1/8 inch in 5 feet (3 mm in 1.5 m) or 1/4 inch in 20 feet (6 mm in 6 m) or more.

 2. Variation from Level: Do not exceed 1/8 inch in 5 feet (3 mm in 1.5 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (9 mm) maximum.

 3. Variation in Joint Width: Do not vary joint width more than 1/8 inch (3 mm) or 1/4 of nominal joint width, whichever is greater.

 4. Variation in Plane Between Adjacent Surfaces: Do not exceed 1/8-inch (3-mm) difference between planes of adjacent components or adjacent surfaces indicated to be flush with components.

**3.4 REPAIR**

 A. Surface Repair:

 1. Repair chipping and other surface damage noticeable when viewed in direct daylight at 20 feet (6 m).

 2. Repair with matching touchup material provided by manufacturer and in accordance with manufacturer's instructions.

 3. Repair methods and results to be approved by Architect.

**3.5 FIELD QUALITY CONTROL**

 A. Inspection and Acceptance: Cast Stone Institute Standard Specification.

**3.6 CLEANING**

 A. In-Progress Cleaning:

 1. Clean cast stone components as work progresses.

 2. Remove mortar fins and smears before tooling joints.

 B. Final Cleaning:

 1. Clean exposed cast stone, after mortar is thoroughly set and cured.

 2. Cleaner:

 a. Wet surfaces with water before applying cleaner.

 b. Apply cleaner to cast stone in accordance with cleaner manufacturer's instructions.

 c. Remove cleaner promptly by rinsing thoroughly with clear water.

[\* Specifier Notes: The following article is optional. Delete if not required. Consult Continental Cast Stone for additional information regarding the use of water repellant. \*]

**3.7 WATER REPELLANT**

 A. For cast stone masonry, a silane or siloxane water repellant for weatherproofing cast stone masonry can be applied. Apply water repellant in accordance with manufacturer's instructions. New England Veneer Stone is factory sealed and does not require sealing on-site.

 B. Apply water repellant after pointing, repair, cleaning, inspection, and acceptance are completed.

**3.8 PROTECTION**

 A. Protect installed cast stone masonry from splashing and other damage during construction.

**END OF SECTION**