

**SECTION 04 72 00
CAST STONE**

1.01 REFERENCE STANDARDS

- A. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.

PART 1.00 - GENERAL

2.01 -----

A. 1.01 GENERAL REQUIREMENTS

- 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

B. Work Included

- 1. The Work of this Section includes all labor, materials, equipment and services necessary to complete the cast stone as shown on the drawings and specified herein, including but is not necessarily limited to the following:
 - a. One piece pre-cast stone treads with non slip abrasive bars.
 - b. Mortar.
 - c. Anchors and accessories.
 - d. Joint filler.

C. Related Work

- 1. Steel Pan Stairs – Section 05 51 00
- 2. Sealant work - Section 07 90 00.

D. quality assurance

- 1. Qualifications of Workers
 - a. For the actual cutting and placing of cast stone units, use only skilled journeyman masons who are thoroughly experienced with the materials and methods specified and thoroughly familiar with the design requirements.
- 2. Manufacturer shall have a minimum of ten (10) years experience in the manufacture of cast stone. Manufacturer's products must have previously been used on the exterior with satisfactory results. Manufacturer must have capability to produce cast stone on schedule and shall be a member of PCI.
- 3. Casting Tolerances: Maintain casting, bowing, warping and dimension tolerance within the following maximums:
 - a. Overall dimension for height and width of units
 - 1) Plus zero of unit dimension to minus 3/32" for 10'-0" and over.
 - b. Bowing or warping
 - 1) Do not exceed 1/360 of the span.
 - c. Insert locations
 - 1) Place within plus or minus 1/4" in each direction.

E. 1.05 submittals

- 1. Submit samples of cast stone with documented independent testing laboratory reports to the Architect for approval.
- 2. Samples: Before any cast stone materials are delivered to the job site, submit twelve (12) inch long samples of each profile type cast stone unit required.
 - a. Submit 12" x 12" cast stone tread samples with non slip abrasive bars.
- 3. Shop Drawings: Submit complete shop drawings of all cast stonework showing anchorage, type location and spacing, joint fillers, mortar, and pre-cast stone profiles, sizes, connections, reinforcing and adjacent construction.

- a. The shop drawings shall show the setting mark of each stone and its location on the structure. The stone when delivered shall bear the same corresponding setting mark on an unexposed surface.
 - b. Shop drawings must show exact profiles for each piece.
 - 4. Certification: Submit certification from an independent testing laboratory certifying to compressive strength and absorption of pre-cast stone units as specified herein.
- F. product handling
 - 1. Protection: Use all means necessary to protect cast stone and related materials before, during and after installation and to protect the installed work and materials of all other trades.
 - a. Cast stone shall be stored on skids off the ground and covered with plastic sheeting; all material in contact with stone shall be non-staining.
 - 2. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2.00 PRODUCTS

4.01 -----

- A. PRE-cast stone color and finish
 - 1. Cast stone used in this work shall match color and texture of samples approved by NYCHA.
 - 2. Exposed surfaces, unless otherwise specified, shall exhibit a typically fine grained texture. No bug holes will be permitted and all facing material shall be mixed in a muller mixer.
 - 3. The samples shall be approved by NYCHA before the manufacturer shall be required to proceed with the work.
- B. manufacturer
 - 1. All Cast Stone used in this work shall be manufactured by W.N. Russel & Company, Westmont, New Jersey, Concrete Technologies Inc. Springboro, Ohio, Sun Precast Company, McClure, PA, or approved equal and shall have a minimum compressive strength of seven thousand (7000) lbs. per square inch and absorption of not greater than five (5) percent when tested in accordance with ACI 704.
- C. materials
 - 1. Cement shall be portland Type I white and/or grey, meeting ASTM C150.
 - 2. Fine aggregate shall be carefully graded and washed natural sands, or manufactured granite, marble, quartz or limestone sands meeting ASTM C33, except that gradation may vary to achieve desired finish and texture.
 - 3. Coarse aggregate shall be carefully graded and washed natural gravel, or crushed graded stone such as granite, marble quartz, limestone or other durable stone meeting ASTM C33, except that gradation may vary to achieve desired finish and texture.
 - 4. Coloring: All colors added shall be inorganic (natural or synthetic) iron oxide pigments meeting ASTM C979 excluding the use of a cement grade of carbon black pigment, and shall be guaranteed by the manufacturer to be light fast and lime proof. The amount of pigment shall not exceed ten (10) percent by weight of the cement used.
 - 5. Cast stone shall be reinforced with new billet steel reinforcing bars meeting ASTM A615, grade 60, when necessary for safe handling, setting and structural stress, and the size of the reinforcing shall be as shown on approved shop drawings. If the surfaces are to be exposed to the weather, the reinforcement shall be galvanized when covered with less than two (2) inches of material for bars larger than 5/8 inch and 1-1/2 inches for bars 5/8 inch or smaller. The material covering in all cases shall be at least twice the diameter of the bars. Stone shall be fully reinforced to take all stresses including handling, temperature changes and structural stress.

6. All anchors, dowels and other anchoring devices shall be furnished by the stone setter as shown on approved shop drawings using building stone anchors fabricated of Stainless Steel Type 304.
- D. fabrication
 1. Cast stone, after being made, shall be cured in a totally enclosed curing room under a dense fog and water spray at ninety-five (95) percent relative humidity for a period of twenty-four (24) hours.
 2. Cast stone shall have arrises to match profiles on approved shop drawings. Provide stone with sinkages to receive anchors.
 3. Cast stone shall have insert strips as shown on the drawings.
 - E. accessories
 1. Mortar for setting of pre-cast stone sections shall conform to ASTM C270, Type S, with not more than 1/2 part lime per part of white non-staining portland cement and integral colorant as specified for face brick construction in Section 04 20 00.
 2. Joint Filler: Fill all joints between stone to stone and stone adjacent dissimilar surfaces with back up rod and sealant conforming to the requirements of Section 07 90 00.

PART 3.00 - EXECUTION

6.01 -----

- A. 3.01 inspection
 1. Examine the areas and conditions where pre-cast stone is to be installed and notify NYCHA of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.
- B. 3.02 installation
 1. Carefully coordinate with all other trades to ensure proper and adequate interface of the work of other trades with the work of this Section.
- C. setting
 1. All cast stone shall be set by experienced stone masons, accurately and in accordance with the shop and setting drawings. Unless otherwise noted, every stone shall be set in a full bed or mortar with all vertical joints flushed full. All anchors and dowels shall be firmly placed and all anchor holes and dowel holes and similar holes filled completely with mortar.
 2. When setting with mortar, all pre-cast stones not thoroughly wet shall be drenched with clear water just prior to setting.
 3. All cast stone shall be protected from splashing mortar or damage by other trades. Any foreign matter splashed on the stone shall be removed immediately.
 4. Joints between cast stone units and cast stone to adjacent materials shall be filled with back-up rod and sealant by Section 07 90 00.
- D. patching
 1. The repair of chipped or damaged cast stone shall be done only by mechanics skilled in this class of work, with materials furnished by the manufacturer and according to his direction.
- E. cleaning
 1. Any mortar on the face of the cast stone shall be removed by scrubbing with a fiber brush using soap and water. No acids or prepared cleaners shall be used without the approval of the cast stone manufacturer.
- F. protection
 1. All cast stone pieces shall be fully protected when installed against damages of any kind. Any piece damaged shall be replaced at no additional cost.

G. inspection and adjustment

1. A. Upon completion of the work, make a thorough inspection of all installed pre-cast stone and verify that all units and joints have been installed in accordance with the provisions of this Section; make all necessary adjustments.

END OF SECTION 04 72 00