SECTION 04720 - ARCHITECTURAL CAST STONE

PART 1 - GENERAL

1.1 FABRICATOR: The Fabricator shall have a minimum of 5 years successful experience in fabrication of integrally colored architectural Cast Stone units, similar to units required for this project. Fabricator must be an APA (Architectural Precast Association) Certified Plant or a PCI (Prestressed/Precast Concrete Institute) certified Plant for category AT or A1 (Architectural Precast).

A. MGA Cast Stone, Inc., Greg Hamann, PO Box 190, 249 Sabbathday Road. New Gloucester, ME 04260, web: www.magacaststone.com, phone: 207-926-5993, fax: 888-926-3032.

1.2 SUBMITTALS:

A. Fabricator information as listed above under section 1.1-A
B. Shop Drawings showing layout, dimensions, and identification of each Cast Stone unit corresponding to sequence and procedure of installation. The Fabricator shall submit the shop drawings to the General Contractor who shall verify all drawing dimensions and coordinate the shop drawings with field conditions and other trades. The General Contractor shall submit the shop drawings to the Architect for approval.
C. Samples & Color: MGA Cast Stone: __(insert color selection)__. No substitutions. Minimum size - 6" x 6" x 2" to illustrate the quality, color, and surface finish texture. Fabricator must develop a custom colored mix to match a colored sample provided by the Architect. The color sample to match would either be an earthtone color shade (such as: limestone color, white, buff, brown, brick orange, brick red, light gray, dark gray, dull yellow) or pure white. Painted, stained, or coated Cast Stone is not acceptable. Unless otherwise noted, all the Cast Stone units on the project will be the same color and of the same mix design. Smooth, dense, fine-grained texture achieved by acid etching to thoroughly remove all surface cement paste.
D. Sealer Product Data: If any of the precast includes exterior stair treads or other units that may come in contact with salt or other deicing compounds, those units, and only those units, must be sealed with a penetrating sealer after they are installed and cleaned. The installer shall submit product data on the proposed penetrating sealer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III, Color to be white or gray as required to achieve proper color as determined by the Architect.
B. Coarse Aggregate: ASTM C 33, except for gradation. Color to be white. Darker aggregates may be used as long as the proper color mix is achieved as determined by the Architect.

C. Fine Aggregate: ASTM C 33, except for gradation. Color to be white. Darker aggregates may be used as long as the proper color mix is achieved as determined by the Architect.
D. Pigments: ASTM C 979; Inorganic, nonfading, resistant to lime and other alkalis. Pigments not to exceed 10% of the cement weight.
E. Water: Drinkable, free from foreign materials in amounts harmful to concrete or cast in steel.
F. Air-Entraining Admixture: ASTM C 260.
G. Water-Reducing, Retarding, or Accelerating Admixtures: ASTM C 494, type as selected by Fabricator and containing not more than 0.1 percent chloride ions.
H. Reinforcement: New billet steel reinforcing bars, as necessary for safe handling, setting and structural stress. Size of the reinforcing shall be specified with a minimum area of steel equal to one quarter of one percent of the cross section area. If the surfaces are to be exposed to the weather, the reinforcement shall be galvanized or epoxy coated when covered with less than 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.
    1. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
    2. Epoxy-Coated Reinforcing Bars: ASTM A 775.
    3. Galvanized Reinforcing Bars: ASTM A 767, Class II (2.0 oz. zinc psf), hot-dip galvanized after fabrication and bending.
    4. Welded Wire Fabric: ASTM A 185.
I. Anchorages: The Setting Contractor is to provide all loose hardware (dowels, anchors, plates, etc.) necessary for securing Cast Stone units to supporting and/or adjacent members. Anchors to be non-corrosive; galvanized, brass or stainless steel type 304.

2.2 MIX PROPERTIES: Minimum 5000 psi compressive strength at 28 days using 6" x 12" cylinders per ASTM C39-86; Total Air Content not less than 4% nor more than 8%; Water Absorption is not to exceed 6% by weight when tested per ASTM C 642.

2.3 SURFACE FINISH: Remove all surface cement paste by means of acid etching to provide a smooth, dense, fine-grained texture with no streaks or blotches. Texture and quality of finish to be generally equal to the approved sample when viewed in direct daylight at a 10 foot distance.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Anchorages: The Setting Contractor is to provide loose steel plates, clip angles, seat angles, anchors, dowels, cramps, hangers, and other miscellaneous loose steel shapes not provided by other trades, necessary for securing Cast Stone units to supporting and/or adjacent members.
B. Do not install any Cast Stone units that have any defects that exceed the acceptable PCI MNL-117 tolerances for dimensions and color if installation would result in unsatisfactory performance or appearance in the opinion of the Architect.
C. Install Cast Stone concrete members plumb, level, and in alignment in accordance with PCI MNL-117 erection tolerances and the contract documents Provide temporary

supports and bracing as required to maintain position, stability, and alignment as members are being permanently connected.

D. Protect the Cast Stone units from discoloration and staining when washing down the surrounding masonry by covering the Cast Stone units with plastic sheeting and/or by thoroughly soaking them with clear water to prevent dirty washdown water from being absorbed into them. If dirty washdown water gets on the Cast Stone, hose it off immediately with clear water.
E. Patching: The repair of chipped or damaged Cast Stone shall be done with materials and instructions furnished by the Fabricator. The Cast Stone shall show no obvious repairs or imperfections other than minimal color variations when viewed with the unaided eye under good typical day lighting at a 20 foot distance.
F. Cleaning: Before pointing and/or caulking, the face of all Cast Stone shall be scrubbed with a fiber brush, using mild detergent and water and shall then be thoroughly rinsed with clean running water. Any mortar on the face of the Cast Stone shall be removed. No acids or prepared cleaners shall be used without the approval of the Cast Stone Fabricator.
G. Sealing: Only exterior stair treads and other units that may come in contact with salt or other deicing compounds must be sealed with a penetrating sealer approved by the Architect. The sealer is to be applied in accordance with the sealer manufacturer's instructions after the units have been installed, cured, patched, and cleaned. Do not apply sealer before installation since it may prevent mortar, joint sealant and patches from adhering.

3.2 PERFORMANCE REQUIREMENTS

A. Applicable standards for inspection and quality control shall be Appendix J (Architectural Trim Requirements) in PCI MNL - 117 "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products" (3rd Edition) and PCI's "Architectural Precast Concrete Design Manual, 2nd Edition".
B. The Architectural Cast Stone units shall show no obvious repairs or imperfections other than minimal color variations when viewed with the unaided eye at a 20 foot distance in good typical daylight illumination.
C. Any unacceptable Cast Stone units that can not be repaired to the Architect's satisfaction in accordance with the aforementioned criteria are deemed unacceptable and are to be replaced by the Contractor.

-END OF SECTION 04720-