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SECTION 03450

ARCHITECTURAL PRECAST CONCRETE TRIM

Part 1 - GENERAL

1.1 REFERENCES:

A. Prestressed Concrete Institute MNL 117 "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products" - 3rd Edition, primarily Appendix J.

B. Prestressed Concrete Institute's "Architectural Precast Concrete Design Manual, 2nd Edition".

C. ASTM standards as stated herein.

1.2 SUMMARY

A. This specification covers all labor, materials and services for the furnishing and setting of the integrally colored architectural precast concrete units as indicated on the drawings and specifications herein.

B. The Fabricator shall have a minimum of 5 years successful experience in fabrication of architectural precast concrete 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). Fabricator must adhere to procedures that are applicable to the manufacturing of Architectural Precast Concrete trim pieces as outlined in Appendix J of PCI MNL-117 (3rd Edition) and the PCI Design Manual (2nd Edition).

1. Fabricator:

a. MGA Cast Stone, Inc., Contact: Tom Hamann, CSO.
PO Box 207, Oxford ME. 7 Oxford homes lane, Oxford, ME 04270, web: www.mgacaststone.com, phone.: 207-539-6035, fax: 888-926-3032. tom@mgacaststone.com

b. Fabricator requirements:

i. Proof of APA Plant Certification or proof of PCI Certification for category AT or A1.

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ii. Brochures or photos showing integrally colored precast from at least three previous projects that are of acceptable appearance in the opinion of the Architect. Names and locations of projects must be provided.

iii. At least three test reports less than 12 months old showing that the 5000 psi compressive cylinder strength and absorption requirements (less than 5%) called for in this specification can be met. Tests must have been performed by a professional testing laboratory.

iv. List of five successfully completed precast jobs at least five years old that include project name, location, General Contractor, and Architect.

2. Under no circumstances shall items labeled as precast concrete be cast in the field.

C. The setting contractor shall unload, store, protect, and install as covered by this Specification and shall provide and install all anchors and accessories for same. The setting contractor shall have a minimum of 3 years successful experience in erection of architectural precast concrete units similar to units required for this project.

1.3 SUBMITTALS: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

A. Fabricator information as listed above under section 1.2-B-1-a

B. Shop Drawings:

1. Prepared by an experienced professional detailer showing complete information for fabrication and installation of precast concrete units.

a. Show layout, dimensions, and identification of each precast unit corresponding to sequence and procedure of installation.

b. Make design modifications only as necessary to meet field conditions and to ensure proper fitting of the work and only as acceptable to the Architect.

c. If required, comprehensive engineering analysis signed and sealed by a qualified engineer in the state of Maine responsible for its preparation.

2. 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. The Fabricator shall not start production until the shop drawings

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are approved by the Architect and General Contractor in writing.

C. Color & Samples

1. Minimum size - 6" x 6" x 2" to illustrate the quality, color, and surface finish texture.

2. Color: MGA Cast Stone : Standard White with Heavy Etch. No substitutions. 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 precast is not acceptable. Unless otherwise noted, all the precast units on the project will be the same color and of the same mix design.

3. Texture: 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.

1.4 DELIVERY, STORAGE, AND HANDLING.

A. Deliver precast concrete units to project site in such quantities and at such times to assure continuity of installation. Store units at project site to prevent cracking, distortion, warping, staining, or other physical damage and so that markings are visible. Lift and support units only at designated lifting or supporting points as shown on final shop drawings.

Part 2 - PRODUCTS

2.1 FORMWORK

A. Provide forms and, where required, form-facing materials of metal, plastic, wood, or other acceptable material that is nonreactive with concrete and will produce required finish surfaces per the approved sample. Maintain form work to provide completed precast concrete trim units within specified fabrication tolerances.

2.2 REINFORCEMENT

A. All precast concrete units shall be reinforced with new billet steel reinforcing bars, as

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necessary for safe handling, setting and structural stress, and the 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, were cover is less than 1 ½".

3. Galvanized Reinforcing Bars: ASTM A 767, Class II (2.0 oz. zinc psf), hot-dip galvanized after fabrication and bending, were cover is less than 1 ½"

4. Welded Wire Fabric: ASTM A 185.

B. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs that are plastic protected (CRSI, Class I) or stainless steel protected (CRSI, Class 2).

2.3 CONCRETE 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.

2.4 CONNECTION MATERIALS

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A. Anchors - Non-corrosive; galvanized, brass or stainless steel type 304.

B. Finish of Other Steel Units (Plates, braces, etc.): Units exposed to weather to be hot-dip galvanized after fabrication, ASTM A 153; Units not exposed to weather to be painted with one coat of rust-inhibitive primer; threaded inserts cast into precast units, hot-dip galvanized, electrogalvanized, or cadmium plated.

2.5 PROPORTIONING AND DESIGN OF MIXES

A. Unless otherwise noted, all the precast units on the project will be wet cast of the same color and of the same mix design. Design mixes may be prepared by independent testing facility or by qualified precast manufacturing plant personnel, at precast fabricator's option.

B. Mix Properties: Wet cast, Standard-weight concrete consisting of specified portland cement, aggregates, pigments, admixtures, and water to produce the following properties;

1. Compressive Strength: Minimum 5000 psi at 28 days using 6" x 12" cylinders per ASTM C39-86.

2. Total Air Content: Not less than 4% nor more than 8%.

3. Water Absorption: Not to exceed 6% by weight when tested per ASTM C 642.

4. Color: As selected by Architect per the approved precast concrete sample.

2.6 FABRICATION

A. Tolerances of Finished Units: In accordance with 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. Fabricate units straight, smooth, and true to size and shape, with exposed edges and corners formed or stoned to a minimum radius unless otherwise indicated.

C. Testing: Tests to be performed by a certified testing laboratory. Testing to be paid for by the Fabricator. Results to be kept on file for at least two years and submitted upon Architect's request. No testing is required on projects where the total volume of concrete is under 25 CF.

1. Perform one set of 6" x 12" cylinder tests for every 500 cubic feet of concrete placed.

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2. Perform one absorption test for every 500 cubic feet of concrete placed.

D. Curing: Cure units in a warm, moist, totally enclosed curing room for a minimum of 20 hours.

E. Cast-In Items: Fabricator to provide reglets, slots, holes, inserts, and other accessories in units to receive dowels, reglets, waterstops, flashings, anchors and other similar work as indicated.

F. 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.

G. Color: The color shall be equal to the approved sample when viewed in direct daylight at a 10 foot distance. Color variation between pieces shall be minimal.

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 precast units to supporting and/or adjacent members.

B. Do not install any precast 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 precast 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 precast units from discoloration and staining when washing down the surrounding masonry by covering the precast 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 precast, hose it off immediately with clear water.

E. Patching: The repair of chipped or damaged precast shall be done with materials and instructions furnished by the Fabricator. The precast 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 precast shall be scrubbed with a fiber brush, using mild detergent and water and shall then be thoroughly rinsed with clean running

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water. Any mortar on the face of the precast shall be removed. No acids or prepared cleaners shall be used without the approval of the precast 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 Precast Concrete 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 precast units that cannot be repaired to the Architect's satisfaction in accordance with the aforementioned criteria are deemed unacceptable and are to be replaced by the Contractor.

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SECTION 04230 - Glass Unit Masonry
THIN BRICK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Thin brick veneer.

1.2 RELATED SECTIONS

A. Section 04 05 16.26 - Engineered Masonry Grouting.

1.3 REFERENCES

A. ASTM C 1088 - Standard Specification for Thin Veneer Brick Units Made From Clay or Shale.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. [Product Data]: Manufacturer's catalog data, detail sheets, and printed installation instructions.

C. Selection Samples: For each product requiring color/texture selection, provide full size samples for final selection.

D. Verification Samples: For each product, color, and texture selected, provide two full-size units representing actual color and texture of products to be installed.

1.5 SAMPLE PANELS

A. Construct sample panel at location indicated or directed, and as follows:
   1. Size: 4 feet by 4 feet (1.2 m by 1.2 m).
   2. Include all unit types and sizes to be used, and mortar joint treatment.

B. Obtain architect's acceptance of sample panel before beginning construction activities of this section.

C. Do not remove sample panel until construction activities of this section have been accepted by architect.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products of this section on pallets, with individual faces protected; keep dry.

B. Store units in protected area or under cover on level ground; keep dry. Do not double-stack pallets.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Endicott Clay Products Co., which is located at: 57120 707th Rd. ; Endicott, NE 68350; Tel: 402-729-3315; Fax: 402-729-5804; Email:request info (endicott@endicott.com); Web:www.endicott.com

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B. Requests for substitutions will be considered in accordance with provisions of Section 01 6 00 - Product Requirements.

2.2 MATERIALS

A. Thin Brick: ASTM C 1088, Type TBX, tested in accordance with ASTM C 67, as manufactured by Morin Brick.
   1. Size: 2-1/4 inches (57.2 mm) high, 7-5/8 inches (193.7 mm) long, 5/8 inch thick.
   2. Texture: Wirecut.
   3. Color: Royal River Full Range
   4. Mortar to be tinted

B. Trim Units: Matching thin brick.

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect related conditions; do not start work in an area until adverse conditions in that area are corrected.

3.2 PREPARATION

A. Test surfaces for straightness, levelness. Notify Architect where corrections are needed.

3.3 INSTALLATION

A. Install thin brick in accordance with manufacturer's printed instructions.

B. Cut units where required for fitting or for installation of built-in items, using power tools; do not install units having chipped or cracked edges on sight-exposed surfaces.

C. Align base courses to follow accurate floor lines.

D. Align faces plumb, level, and true, with uniform joint widths.

E. Size and portion units for best appearance, with joints arranged neat and symmetrical, free of imperfections detracting from overall appearance.

3.4 FIELD QUALITY CONTROL

A. Architect will observe appearance of installed units; installed masonry surfaces shall be free of imperfections which detract from overall appearance when viewed from a distance of 5 feet (1.5 m) at 90 degrees normal to surface.

3.5 CLEANING

A. Clean installed masonry surfaces in accordance with manufacturer's instructions; do not clean units with products not specified in manufacturer's instructions.

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SECTION 10 73 13

AWNINGS

PART 1 GENERAL

1.1 SUMMARY

A. Work of this Section includes fabric awnings and metal awning frames systems.
B. Related Sections
   1. Section 06200 – Finish Carpentry

1.2 REFERENCES

A. Structural welding code steel AWS D1.1
B. Structural welding code steel AWS D1.2

1.3 SUBMITTALS

A. General: Submit each item in this article according to the Condition of the contract and Division 1 Specification Sections.
B. Shop Drawings: Show shop and erection details, including cut, copes, connections holes and welds. Show welds, both shop and field, by the current recommended symbols of the AWS. Do not fabricate members until shop drawings have been reviewed.
C. Include engineering calculations showing wind load requirements of the local Building Department and include fastener and erection details, signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 QUALITY ASSURANCE

Requirements of Awning manufacturer and Awning Contractor, contractor must provide proof of certifications:

A. Have been in continuous operation as a professional fabric awning manufacturer for a minimum of ten (10) years prior to this contract.
B. Hold a valid general contractor's license for a minimum of five (5) years.
C. Welder Qualifications: The personnel manufacturing the metal awning frames must certified welders.
D. Provide written welding procedure specifications.
E. Professional Engineer Qualifications: A professional engineer who is legally authorized to practice in the jurisdiction where project is located and who is experienced in providing engineering services for installing fabric awnings similar to those indicated for this project and with a record of successful in-service performance.

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1.5 WARRANTY

A. Warrant frame materials and workmanship against defects for a period of one (1) year from date of substantial completion of the Work.
B. Warrant fabric materials and workmanship against defects for a minimum period of five (5) years, on a prorated basis, from the date of substantial completion of the work and/or offer the same warranty offered by the fabric mill that manufactured or supplied the fabric.

PART 2 PRODUCTS

2.1 AWNINGS

A. Awning shapes:
    a. Standard Window Awning
    b. Standard Window Awning with Solid Valance
    c. Convex Awning
    d. Concave Awning
    e. Dome Awning
    f. Long Dome Awning
    g. Patio Canopy
    h. Rounded Entrance Canopy
    i. Gable Roof Entrance Canopy
    j. Hip Roof Entrance Canopy
    k. Free Standing Cabana Canopy

B. Fabric: Sunbrella® 100 percent acrylic fiber, Color: 6003-0000 Jockey Red, manufactured by Glen Raven Mills or other exterior grade fabric awning material that carries a minimum five (5) year manufacturer's warranty.
C. Frames: Minimum 1-inch square 16GA galvanized steel ASTM A 500 tubing or 1" square .125 ASTM B 221 aluminum tubing, welding to AWS standards with welds ground smooth. Frames designed for wind loads, snow loads and seismic requirements as required by structural engineering requirements.
D. Frames: All corners are to be mitered or completely welded to AWS standards.
E. Metal welding: All joints must be mitered or completely welded to AWS standards, ground smooth, primed and painted.
F. Use Eide Aluminum Awning Rail molding to attach fabric cover to head bar.
G. Anchors: Anchoring hardware shall be galvanized, zinc-coated 3/8" diameter or greater.
H. Painting: Two coats of polyester powder coat required when the awning installation is within 4 miles of the ocean or Painting: Shop primer shall conform to FS TT-P-615d (2). Type 1. Use Rustoleum brand paint 2185 zinc –rich spray when further than 4 miles from the ocean.
I. Caulking: Acrylic latex or silicone sealant at head bar and wall junction.
J. Use aluminum side molding to attach material to head bars.
K. Sewing thread, must be Gore Tenara® brand or equal.

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2.2 FABRICATION

A. Fabricate awning and frames in strict accordance with the reviewed shop drawings, written welding procedure specifications and the reference standards.
B. Awning Frame Finish: Frames and metal components are to be polyester powder coat painted.

PART 3 INSTALLATION

3.1 INSTALLATION

A. Minimum ten (10) years awning installation experience required by the awning contractor.
B. Buildings are to be field measured by the awning contractor prior to awning manufacture and awning installation.
C. Install awnings and frames in strict accordance with the Drawings and the reviewed shop drawings, and provide appropriate building code requirements and aligned and plumb.
D. Welding procedures and operation shall comply with the referenced standard. Welding electrodes shall comply with ASTM A 233, E-70 Series. Grind smooth exposed welds; finish welds to the inside.

END OF SECTION