SECTION 042130 - "MICROCOTTA"

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes: "Microcotta"; cast architectural polymer resin units manufactured to simulate the following:

Natural cut stone.

Terra cotta.

Cast iron.

Specifier's Note: The following may be required for some projects; delete if there are no allowances on the project.

* + - 1. ALLOWANCES

Retain products and work included in this Section that are covered by cash or quantity allowance. Do not include amounts. Insert descriptions of items in Part 2 or 3 to provide information affecting the cost of the Work that is not included under the allowance. Delete this article if all work is done by lump-sum price.

Remaining paragraphs are examples only; revise to suit Project. Insert additional allowances according to retained types of work and allowances established. If there are multiple drawing designations for types of work, establish separate allowances for each drawing designation.

* + - * 1. Remove and replace terra cotta as part of terra cotta removal and replacement allowance.
			1. UNIT PRICES

Do not include amounts. Insert descriptions of items in Part 2 or 3 to provide information affecting the cost of the Work that is not included under the unit price.

Retain this article to establish unit prices during bidding that can be used for unforeseen changes.

Retain this article if using a single Unit-Price Schedule with a column of estimated quantities on which bids are priced and evaluated.

* + - * 1. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."

Unit prices apply to authorized work covered by [**quantity allowances**] [**estimated quantities**].

Unit prices apply to additions to and deletions from Work as authorized by Change Orders.

* + - 1. ACTION SUBMITTALS
				1. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
				2. Shop Drawings: For the following:

Full-size patterns with complete dimensions for new "Microcotta" units and their jointing, showing relation of existing to new units.

Setting number of each new "Microcotta" unit and its location on the structure in annotated plans and elevations.

Provisions for expansion joints or other sealant joints.

Provisions for flashing, lighting fixtures, conduits, and weep holes as required.

Replacement and repair anchors. Include details of anchors within individual units, with locations of anchors and dimensions of holes and recesses in units required for anchors.

* + - * 1. Samples for Verification: For the following:

Retain and revise five subparagraphs below and insert others to suit Project.

Each type of "Microcotta" unit to be used for replacing existing units. Include sets of Samples as necessary to show the full range of shape, color, and texture to be expected.

Retain first subparagraph below and option in second subparagraph for tight control of appearance and unit size (accommodating shrinkage). If retaining, consider limiting this requirement to specific, highly visible units. It will add to Project time and cost.

Patterns for "Microcotta": Before manufacturing "Microcotta" units, submit the actual patterns from which molds will be made for casting new units. Package and ship to prevent loss or damage or make patterns available for inspection by Architect at fabrication plant.

For "Microcotta," provide one of each shape, color, and texture of unit, suitable and ready for installation. [**Make this submittal after acceptance of patterns for "Microcotta."**]

Sealant Materials: See Division 07 Section "Joint Sealants."

Accessories: Each type of anchor, accessory, and miscellaneous support.

* + - 1. QUALITY ASSURANCE

Retain required mockups in first paragraph below; insert others to suit Project. Revise or delete paragraph if test areas were prepared or are required as part of a separate contract.

* + - * 1. Mockups: Prepare mockups of "Microcotta" installation to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.

Replacement Units: Prepare sample areas not smaller than 48 inches (1200 mm) in least dimension. Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include a minimum of four "Microcotta" units.

Retain first subparagraph below if mockups are not only for establishing appearance factors.

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

Retain subparagraph below if mockups are installed as part of building rather than erected separately and the intention is to make an exception to the default requirement in Division 01 Section "Quality Requirements" for demolishing and removing mockups when directed unless otherwise indicated.

Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

Retain paragraph below if Work of this Section is extensive or complex enough to justify a preinstallation conference.

* + - * 1. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

Retain subparagraphs below if additional requirements are necessary; include information about conference.

Review methods and procedures related to "Microcotta" installation including, but not limited to, the following:

Construction schedule. Verify availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.

Materials, material application, sequencing, tolerances, and required clearances.

<**Insert agenda items**>.

* + - 1. DELIVERY, STORAGE AND HANDLING
				1. Deliver "Microcotta" components secured to shipping pallets and protected from damage and discoloration.
				2. Protect corners from damage. Deliver each piece of "Microcotta" with code mark or setting number on unexposed face, corresponding to Shop Drawings, using nonstaining paint.
				3. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
				4. Store "Microcotta" components and installation materials in accordance with manufacturer’s instructions.

Store "Microcotta" components on pallets with non-staining, waterproof covers.

Ventilate under cover to prevent condensation.

Prevent contact with dirt.

* + - * 1. Handling:

Protect "Microcotta" components during handling and installation to prevent chipping, cracking, or other damage.

* + - 1. PROJECT CONDITIONS
				1. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit work to be performed according to manufacturers' written instructions and specified requirements.

If required, insert "Extra Materials" Article for extra materials that match products applied or installed.

* + - 1. "MICROCOTTA" MOLDS

Retain this article only if future need for molds can be reasonably expected and Owner has space and takes responsibility for their storage and protection. Often, terra cotta manufacturer stores molds for long or indefinite periods. Patterns from which molds were made might be useful for display purposes, but they are less useful for fabrication than are molds. If any of the patterns are required, revise this article accordingly.

* + - * 1. On completion of the manufacturing of units, deliver one unused mold of each shape and size of unit delivered to Project site. Deliver to a location and at a time determined by Owner, to become property of Owner.
				2. Have molds delivered carefully packed; protected from dirt, moisture, and breakage; so as to arrive in usable, undamaged condition and enable long-term storage and possible future use.
1. PRODUCTS
	* + 1. MASONRY MATERIALS
				1. Replacement Material for Deteriorated Terra Cotta: "Microcotta"; Freedom Cement, LLC, 24 East Brookfield Road, North Brookfield, MA 01535. info@freedomcement.com. Phone: 866-254-7277.

Provide new "Microcotta" units to match existing deteriorated terra cotta units in body composition, physical properties, colors, color variation within units, surface texture, unit profile, and dimensions.

Physical Properties:

Compressive Strength: 15,000 psi per ASTM D695.

Water Absorption: 0.1 percent per ASTM D570.

Coefficient of Linear Expansion: 0.000030 inch per inch per degree F per ASTM D696.

Un-Notched Izod Impact: 0.53 lbf per square inch per ASTM D256.

* + - 1. MORTAR MATERIALS
				1. Mortar: Refer to Division 04 Section "Unit Masonry."
			2. CLEANING MATERIALS
				1. General: Refer to Division 04 Section "Unit Masonry."
			3. ACCESSORIES
				1. Anchor pins and dowels should be stainless steel. Shelf angles and other similar structural items should be galvanized. Consult Granite Tech Ltd. for assistance in specifying anchors for the specific application.
				2. "Microcotta" Anchors: Type and size indicated or, if not indicated, to match existing anchors in size and type. Fabricate anchors from [**Type 304**] [**Type 316**] stainless steel.
				3. Joint Sealant and Backing: As specified in Division 07 Section "Joint Sealants."
			4. FABRICATION
				1. Shapes: Unless otherwise indicated on Drawings, provide the following:

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

Drips on projecting components, wherever possible.

Replicate exact profile an\d finish of stones submitted to manufacturer for duplication.

Specifier's Note: Verify requirement for reinforcement.

* + - * 1. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses.

Comply with ACI 318.

Provide reinforcement of a minimum of 0.25 percent of cross-section area.

Minimum wall thickness to be 3/4 inch (19 mm).

* + - * 1. Tolerances: Fabricate "Microcotta" components within specified tolerances.

All dimensions: Plus or minus 1/8 inch (3 mm).

Maximum Bow, Camber, or Twist: Length/360.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine construction to receive "Microcotta" components. Notify Architect if construction is not acceptable. Do not begin installation until unacceptable conditions have been corrected.
			2. INSTALLATION
				1. General: Install "Microcotta" components in conjunction with masonry complying with requirements of Division 04 Section "Unit Masonry."
				2. Setting:

Do not use equipment in a manner that could damage "Microcotta" components.

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

Fill vertical joints with sealant, as specified.

Make all joints 3/8 inch (9.5 mm), except as otherwise detailed.

Sponge face of each stone to remove excess setting materials.

Tool joints to a slight concave profile.

* + - * 1. Sealant Joints:

Comply with requirements of Division 07 Section "Joint Sealants."

Prime ends of "Microcotta" components, insert properly sized foam backing rod, and install sealant using sealant gun.

Provide sealant joints at following locations and as otherwise detailed:

"Microcotta" components with exposed tops.

Joints at relieving angles.

At control and expansion joints.

Perimeters open to weather.

* + - 1. TOLERANCES
				1. Installation Tolerances: Comply with manufacturers recommendations, unless otherwise specified.

Variation from Plumb: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m) or 1/4 inch in 20 feet (6 mm in 6 m) or more.

Variation from Level: Do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (9 mm) maximum.

Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or 1/4 of nominal joint width, whichever is less.

Variation in Plane Between Adjacent Surfaces (Lipping): Do not exceed 1/16‑inch (1.5‑mm) difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

* + - 1. ADJUSTING
				1. Surface Repair:

Repair chipping and other surface damage noticeable when viewed in direct daylight at 10 feet (3 m).

Repair with matching touch-up material provided by manufacturer and in accordance with manufacturer’s instructions.

Repair methods and results to be approved by Architect and noted on “as-built” drawings for future reference.

* + - 1. CLEANING
				1. In-Progress Cleaning:

Clean "Microcotta" before sealants are applied.

Cleaner:

Wet surfaces with water before applying cleaner.

Apply cleaner to "Microcotta" in accordance with manufacturer’s instructions.

Remove cleaner promptly by rinsing thoroughly with clean water.

* + - 1. PROTECTION
				1. Protect "Microcotta" components from splashing and other damage.

END OF SECTION 042130