SECTION 04 22 23

Architectural Concrete Unit Masonry

1. General
	1. Section Includes
		1. Split face concrete masonry units.
		2. Architecturally styled concrete masonry units.
		3. Shot blasted / weathered concrete masonry units.
		4. Glazed masonry concrete masonry units.
	2. Related Sections

[Specifier Notes] – Retain only those sections related to the scope of work in this section.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
		2. Section 03 45 13 - Faced Architectural Precast Concrete.
		3. Section 04 27 23 - Cavity Wall Unit Masonry.
		4. Section 07 21 13 - Board Insulation.
		5. Section 07 60 00 - Flashing and Sheet Metal.
	1. References

[Specifier Notes] – Retain only those references contained within the edited scope of work in this section and delete all others.

* + 1. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
		2. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
		3. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units
		4. ASTM C1262 - Standard Test Method for Evaluating the Freeze-Thaw Durability of Dry-Cast Segmental Retaining Wall Units and Related Concrete Units
		5. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.
	1. Definitions
		1. CMU: Concrete Masonry Unit.
		2. Dimensions: All unit sizes are shown as Nominal Dimensions.
	2. Administrative Requirements
		1. Scheduling: Provide to Owner or Owner’s representative a schedule and list of participants required to attend coordination and progress update meetings.

[Specifier Notes] – Retain only those individuals required to be in attendance for progress meetings. Delete the entire following sub-paragraph if not required.

* + - 1. Owner representative(s) for Facilities Management.
			2. General Contractor.
			3. Project Manager.
			4. Manufacturer’s Representative.
			5. Project Architect.
			6. Project Engineer.
	1. Informational SUBMITTALS
		1. Submit under provisions of Section 01 30 00.
		2. Product Data: Manufacturer's product information and data sheets for each product specified in this section, including:
			1. Substrate preparation instructions and recommendations.
			2. Installation means and methods.
			3. Recommendations and requirements for proper storage and handling.
		3. Shop Drawings:
			1. Submit Manufacturer’s approved shop drawings detailing the section and elevation views of each product to be installed.
			2. Coordinate with locations listed on Contract Drawings.
			3. Reinforcing: Provide drawings indicating reinforcing that complies with ACI 315 “Details and Detailing of Concrete Reinforcement”.
				1. Provide elevations indicating steel reinforcing bar placement.
				2. Provide details indicating steel reinforcing bar sizes, placement, bends, and laps dimensions.
		4. Warranty Information:
			1. Submit confirmation and details of manufacturer’s warranty, extended warranty, and replacement policies.
		5. Submit product data for each type of product specified, including certification that each type complies with specified requirements.
		6. Submit sample boards, cards or charts depicting available textures and colors for each CMU.
		7. Mock-Up: Construct a mock-up using the selected stone and mortar materials to illustrate the appearance of the Work specified in this section.
			1. The mock-up should be a nominal 36 inches x 36 inches (1m x 1m).
			2. Construct the mock-up using the size, color blend, texture, joint size, and installation methods specified.
			3. Architect and Owner’s Representative must approve the mockup prior to commencement of Work.
	2. Closeout SUBMITTALS
		1. Spare Materials: Provide spare Concrete Masonry Units of each color and finish combination used on the project.

[Specifier Notes] – Retain one of the next two paragraphs based upon project requirements for spare components.

* + - 1. \_\_\_\_\_\_\_\_ spare units for each color and finish combination.
			2. Provide spare materials as noted in the schedule related to work in this section.
	1. Delivery, Storage and Handling
		1. Deliver masonry materials to the site on quality wooden pallets with appropriate in-plant packaging for safe transit and handling. Store pallets in single stacks on level ground and protect from weather.
		2. Deliver mortar materials in original unbroken, undamaged packages with labels intact and visible.
		3. Store materials covered and off the ground until used on the Work in this section.
	2. WARRANTY
		1. Provide a copy of the project specific manufacturer's warranty which addresses the term of the warranty period (in years), the acceptable standards of production/performance and the agreed upon action for products that fail to meet the standards of production/performance within the specified warranty period.
			1. Warranty period: \_\_\_\_\_\_\_ years.
1. Products
	1. MANUFACTURERS

[Specifier Notes] – Retain the following Paragraph if this document is a PROPRIETARY Specification, with Avigilon’s products listed as the Basis of Design. Delete if not required.

* + 1. Basis of Design Manufacturer: Echelon, An Oldcastle Company.
			1. Address: 3 Glenlake Pkwy, FL 12, Atlanta, GA 30328.
			2. Phone: (844) 495-8211.
			3. Website: www.echelonmasonry.com.

[Specifier Notes] – Retain the following Paragraph if this document is written as a PERFORMANCE specification, without listing a manufacturer as a basis of design. Insert manufacturers that sell products comparable to those specified in this section. Delete if not required.

* + 1. Provide products meeting the requirements specified in this section, from one of the following manufacturers:
			1. <Manufacturer>.
		2. Substitution Limitations:
			1. Submit substitution requests in accordance with provisions of Section 01 60 00.
			2. Single manufacturer will provide, from a single source, the following components:
	1. Performance Requirements
		1. Freeze-Thaw Resistance: Meet or exceed the requirements of ASTM C1262.
		2. Abrasion Resistance: Meet or exceed the requirements of ASTM C744.
		3. Adhesion: Meet or exceed the requirements of ASTM C744.
		4. Color Change: Meet or exceed the requirements of ASTM C744.
		5. Resistance to Crazing: Meet or exceed the requirements of ASTM C744.
		6. Fire Resistance: Rated up to (4) four hours.
		7. Integral Water Repellant: Concrete Masonry Units must include an integral water repellant admixture at the time of production.
	2. Concrete Masonry Units

[Specifier Notes] – Retain the following paragraph if this is a PROPRIETARY specification based upon Echelon’s products.

* + 1. General / Appearance: Integrally colored pre-finished architectural concrete block meeting the requirements of ASTM C90, with a rough-hewn texture on one or more faces. Molded as two units attached face to face, the units are split after curing to expose a rough texture and reveals the aggregates used in the block.
			1. Basis of Design Product: Split-Face masonry units, from Echelon.
		2. General / Appearance: Integrally colored pre-finished architectural concrete block meeting the requirements of ASTM C90, manufactured using a combination of colored, tightly mixed aggregate to create a smooth ground face finish.
			1. Basis of Design Product: Ground Face masonry units, from Echelon.
		3. General / Appearance: Integrally colored pre-finished architectural concrete block meeting
		4. General / Appearance: Pre-finished, integrally colored concrete block meeting the requirements of ASTM C90. One or more faces are ground to expose the variegated colors of the natural aggregate. A factory-applied clear satin gloss acrylic enhances moisture resistance.
			1. Basis of Design Product: Trendstone® concrete masonry units, from Echelon.
		5. General / Appearance: Pre-finished, architectural concrete block meeting the requirements of ASTM C90. One or more faces are ground to emulate a smooth terrazzo finish. A factory-applied clear satin gloss acrylic enhances moisture resistance.
			1. Basis of Design Product: Trendstone Plus® concrete masonry units, from Echelon.
		6. General / Appearance: High-density, pre-finished architectural concrete block meeting the requirements of ASTM C90. Manufactured to achieve the look of natural stone by incorporating all-natural aggregates.
			1. Basis of Design Product: Cordova Stone™ concrete masonry units, from Echelon.
		7. General / Appearance: Pre-finished, architectural concrete block meeting the requirements of ASTM C90. Provides the look of cast stone with manufactured masonry veneer advantages.
			1. Basis of Design Product: Franklin Stone™ concrete masonry units, from Echelon.
		8. General / Appearance: Pre-finished, architectural concrete block meeting the requirements of ASTM C90. Manufactured with colored aggregates and pigment uniformly finished to an even texture. Textured surface resembles split face block with a more uniform, simpler installation and a straighter site line to the building.
			1. Basis of Design Product: Mesastone® concrete masonry units, from Echelon.
			2. Water Repellant: Include a water repellant admixture at the time of production.
		9. General / Appearance: Ground face concrete masonry units meeting the requirements of ASTM C90. Manufactured with recycled material.
			1. Basis of Design Product: Verastone® concrete masonry units, from Echelon.
		10. General / Appearance: Filled and polished ground face masonry units meeting the requirements of ASTM C90 and the look of a smooth terrazzo finish. Manufactured with recycled material.
			1. Basis of Design Product: Verastone® Plus concrete masonry units, from Echelon.
	1. Finishes

[Specifier Notes] – In the following two paragraphs, Select specified CMU color(s) and dimensions from the manufacturer’s standard size offerings. Where more than one size is to be used, insert dimensions for each and coordinate the pattern and <Type> of CMU with the Contract Drawings.

Visit the Echelon website or contact a local sales representative at [www.echelonmasonry.com](http://www.echelonmasonry.com) for current color and size offerings and more information.

* + 1. Color:
			1. As selected from manufacturers standard color range.
			2. Color: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		2. Dimensions:
			1. <Type 1> CMU (WxHxD): \_\_\_\_\_ inches x \_\_\_\_\_ inches x \_\_\_\_\_ inches. Locations and installation pattern as noted in the Contract Drawings.
			2. <Type 2> CMU (WxHxD): \_\_\_\_\_ inches x \_\_\_\_\_ inches x \_\_\_\_\_ inches. Locations and installation pattern as noted in the Contract Drawings.
			3. <Type 3> CMU (WxHxD): \_\_\_\_\_ inches x \_\_\_\_\_ inches x \_\_\_\_\_ inches. Locations and installation pattern as noted in the Contract Drawings.
	1. MOrtar

[Specifier Notes] – In the following paragraphs, retain only paragraphs applicable to work on this project. Select the specified mortar based upon the type and delivery method(s) required.

Prepackaged/ preblended mortars should be mixed and installed per mortar manufacturer’s instructions.

Visit the Echelon website or contact a local sales representative at [www.echelonmasonry.com](http://www.echelonmasonry.com) for more information.

* + 1. Provide site-mixed mortar that meets or exceeds the requirements of ASTM C270 Type N.
		2. Provide site-mixed mortar that meets or exceeds the requirements of ASTM C270 Type S.
		3. Provide pre-blended mortar that meets or exceeds the requirements of ASTM C1714/C1714M Type N.
		4. Provide pre-blended mortar that meets or exceeds the requirements of ASTM C1714/C1714M Type S.
		5. Mortar must include manufacturer approved compatible integral water repellent additive added to each batch in the dosage rates for mortar type specified.

[Specifier Notes] – Delete the entire Article “MIXES” if mortar and grout are specified in another section. and delete the remaining paragraphs of the Mortar and Grout Materials article.

* 1. Mixes
		1. Portland Cement: Conforming to ASTM C150 Type I, Type II or Type III as required to achieve optimal results based on ambient project conditions.
		2. Hydrated Lime: Conforming to ASTM C207, Type S.
		3. Aggregates: Conforming to ASTM C144 for mortar and ASTM C404 for grout.
		4. Pigments: Conforming to ASTM C979. Comply with quantity limitations in referenced standards and from the pigment manufacturer.
		5. Admixtures: Comply with quantity limitation specified ASTM C1384 “Standard Specification for Admixtures for Masonry Mortars” when adding to mortar.
			1. Cold Weather: Comply with ASTM C494 “Standard Specification for Chemical Admixtures for Concrete.”
			2. Integral Water Repellant: Liquid polymeric, admixture that does not reduce flexural bond strength
				1. Basis of Design Product: RainBloc® Water Repellent Masonry Unit admixture, manufactured by ACM Chemistries, Inc.
		6. Water: Potable; Clean and drinkable.
	2. Accessories
		1. Provide coordinating accessory stones as necessary to achieve a complete installation as noted in the Contract Drawings.
1. Execution
	1. Examination
		1. Verify that site conditions are properly prepared to receive concrete masonry units.
		2. Verify that bearing elements are within tolerances conforming to the requirements of ACI 117.
		3. Verify that locations of penetrations, projections and built-in items are correct and properly prepared for work specified in this section.
		4. Verify concrete brick masonry units are according to project specification and meet appropriate ASTM specification requirements. Commencement of installation constitutes acceptance of Concrete Face Brick, Concrete Masonry Units, Concrete Masonry Veneers, and Concrete Thin Veneers.
		5. Preparation: Prepare surfaces and materials in accordance with MSJC Specifications for Masonry Structures. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
		6. Provide adequate lighting for masonry work by placing all lighting at a reasonable distance from the wall for even illumination.
	2. Preparation
		1. Proceed with installation only after substrate(s) are been properly prepared and within tolerances recommended by the manufacturer.
		2. Commencement of installation constitutes acceptance of site conditions.
		3. Draw blocks from more than one pallet at a time during installation.

 [Specifier Notes] – NCMA TEK notes are available at EchelonMasonry.com.

* + 1. Refer to NCMA TEK Notes, for hot and cold weather construction practices.
	1. Installation
		1. Cutting: Make all unit cuts, including those for bonding, holes, boxes, etc., with motor-driven masonry saws, using either an abrasive or diamond blade. Cut neatly and locate for best appearance.
		2. Concrete Masonry Units:
			1. Install concrete masonry units in accordance with industry accepted masonry practices and manufacturer's instructions.
			2. Bond Pattern: As indicated on Construction Drawings.
			3. Do not use masonry units with broken corners and edges in excess of ASTM C90 and ASTM C1634.
			4. Supporting and Forms: Construct forms as needed to adequately and safely support installed concrete masonry units until mortar has cured.
		3. Mortar Bedding and Jointing:
			1. Lay units with full mortar coverage on head and bed joints taking care not to block cores to be grouted or filled with masonry insulation.
			2. Tool all joints into a concave configuration when mortar is thumbprint hard.
			3. Remove mortar from the face of masonry units before it sets.
			4. Tuckpoint joints of scored units for proper appearance and to prevent water penetration. Rake joints are not permitted and will be considered defective work.
		4. Flashing: Install flashing at locations shown in the plans and in strict accordance with Construction Drawings, manufacturer’s instructions and accepted best practices for masonry flashing.

[Specifier Notes] – NCMA TEK notes are available at EchelonMasonry.com.

* + 1. Weeps and Vents: Install weep holes and vents at proper intervals at courses above grade and at any water stops over windows, doors and beams. Consult NCMA TEK notes for proper flashing and drawings.
	1. Flashing
		1. All flashing and accessory detailing components must be corrosion resistant.
		2. Verify that all flashing, including adjacent roof flashing, has been properly installed. Extend flashing material above horizontal terminations, roofing material, drainage planes or drainage products.
		3. Integrate all flashing materials with moisture resistive barriers to prevent water penetration into structure. Lap water resistive barriers over weep screed flanges in a water shedding fashion.
		4. Control Joints: Determine if and where Control joints are needed. Consideration should be given to where differential movement is expected or where movement may be concentrated. Refer to NCMA TEK 10-02C for guidance on control joint locations.
	2. Inspection and Cleaning
		1. Faces must conform to the requirements of ASTM C90 when viewed from twenty (20) feet at right angles to the wall with normal lighting.
		2. Keep work surfaces clean during installation. Use brushes, rags and burlap to remove excess mortar lumps and smears prior to hardening on the finished surfaces.
		3. Refer to Manufacturers recommendations for cleaning instructions for installed veneers.

End of section