**SECTION 042113**

 **ANCHORED BRICK VENEER UNITS**

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| NOTE TO SPECIFIER:Editing Conventions:Coordinate requirements in the Specifications containing **indicated on the Drawings** with the Drawings.Verify that items in red are used on the project or are referred to the right section of the code.This information should be blended into a larger specification section that includes specs for mortar, lintels, and other miscellaneous veneer related items, or supplemented by other specifications sections that cover those items.The information presented in this document is for general information only. It should not under any circumstances be relied upon for specific without independent review and evaluation by a licensed design professional familiar with its specific use and application. Anyone making use of this information does so at their own risk and assumes any and all liability resulting from such use. |

1. GENERAL
	1. SUMMARY
		1. Section Includes: Brick masonry units.
		2. Related Sections:
			1. Section 013119 - Project Meetings.
			2. Section 071900 - Water Repellents.
			3. Section 079000 - Joint Sealers.
	2. REFERENCES
		1. American Society for Testing and Materials (ASTM):
			1. C 33 - Specification for Concrete Aggregates.
			2. C 67 - Test Methods of Sampling and Testing Brick and Structural Clay Tile.
			3. C 126 - Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.
			4. C 216 - Specification for Facing Brick.
			5. C 270 - Specification for Mortar for Unit Masonry.
		2. International Building Code (IBC) adopted addition
		3. Building Code Requirements and Specification for Masonry Structures (TMS 402/602) adopted addition
		4. Most current editions of ASTM standards as cited herein.
	3. SUBMITTALS
		1. Product Data, and Evaluation Reports as required for installation.
		2. Shop Drawings: Include elevations of each wall indicating type and layout of units.
		3. Samples: Include samples of stretcher units in sufficient quantity to illustrate color range.
		4. Test Reports from an independent testing laboratory showing compliance with applicable specifications.
	4. QUALITY ASSURANCE
		1. Inspection: Periodic inspection of mortar, connector and installation should be performed as per International Building Code or Specification for masonry Structures (TMS 602) (The designer may choose not to require special inspection for masonry veneer in occupancy category I, II, or III structures)
			1. Employ a qualified masonry inspector for periodic inspection of the masonry work. Acceptance by a State or municipality having a program of examining and certifying masonry inspectors will be considered adequate qualifications. The masonry inspector shall visit site periodically during all masonry construction and perform the following duties:
				1. Review Drawings and Specifications and meet with the CONTRACTOR to discuss requirements before work commences.
				2. Before masonry work commences, CONTRACTOR and the Contractor's Quality Control Representative shall attend meeting with ENGINEER to review the requirements for surveillance and quality control of the masonry work.
				3. Check brand and type of cement, lime (if used), and source of sand.
				4. Ensure that foundation is clean, rough, and ready to receive units.
				5. Observe field proportioning of mortar. Visually check aggregate to determine uniformity of grading, cleanliness, and moisture.
				6. Ensure that joints are full of mortar and kept tight during work.
				7. Ensure that masons keep the cavity between the brick veneer and the back-up material clean of mortar droppings and inspect to determine compliance.
				8. Perform or supervise performance of required sampling and testing.
			2. Keep complete record of inspections. Report to the Contractor's Quality Control Representative the progress of the masonry inspection.
		2. Mock-up:
			1. Prior to starting construction of masonry, construct minimum 4-foot square mock-up.
			2. Use accepted materials, containing each different kind and color of brick masonry units to illustrate wall design.
			3. Show color range, texture range, bond, mortar color, joint tooling, critical design details and quality of workmanship.
			4. Masonry construction may not proceed until the Architect/Engineer approves mock-up.
			5. When not accepted, construct another mock-up.
			6. When accepted, mock-up will be standard of comparison for remainder of masonry work.
			7. Upon completion and acceptance of Project, dispose of mock-ups in legal manner at offsite location.
		3. Pre-installation Conference: Conduct as specified in Section 013119.
		4. Certification: Furnish manufacturer’s certification that clay brick units provided meet or exceed the requirements of this specification.
	5. DELIVERY, STORAGE, AND HANDLING
		1. Store masonry units above ground to prevent contamination by mud, dust or other materials likely to cause staining or other defects.
		2. Cover and protect masonry units from inclement weather to maintain quality control and physical requirements.
		3. Transport and handle brick masonry units as required to prevent discoloration, chipping, and breakage.
		4. Locate storage piles, stacks, and bins to protect materials from heavy traffic.
		5. Remove chipped, cracked, and otherwise defective units from jobsite upon discovery.
	6. PROJECT CONDITIONS
		1. Cold Weather Requirements:
			1. In accordance TMS 602 Section 1.8 C.
			2. Provide adequate equipment for heating masonry materials when air temperature is below 40 degrees Fahrenheit.
		2. Hot Weather Requirements:
			1. In accordance with TMS 602 Section 1.8 D.
			2. When ambient air temperature exceeds 100 degrees Fahrenheit, or when ambient air temperature exceeds 90 degrees Fahrenheit and wind velocity is greater than 8 miles per hour, implement hot weather protection procedures.
			3. Wet mortar board before loading and cover mortar to retard drying when not being used.
			4. Do not spread mortar beds more than 48 inches ahead of placing masonry units.
			5. Place masonry units within one minute of spreading mortar.
		3. Wetting of Brick: shall be required at the time of laying if the unit’s initial rate of absorption (IRA) exceeds 30 grams per 30 square inches per minute or 1 g/ 645mm2.
		4. Assess substrate wall condition prior to starting brick installation and confirm all preceding work is complete and ready to cover up. Document all issues found unsuitable or not within project parameters (location, plumbness, etc.), that will impact brick installation. Report such found items to the general contractor or construction manager, as appropriate, and seek resolution prior to initiating work.
2. PRODUCTS
	1. FACE BRICK VENEER UNITS
		1. Manufacturers:
			1. Interstate Brick: [www.interstatebrick.com](http://www.interstatebrick.come)
				1. Sales Representative:

Name

Phone

Email

* + - 1. HC Muddox: www.hcmuddox.com
				1. Sales Representative:

Name

Phone

Email

* + 1. Type: ASTM C 216, Grade SW, Type FBX [FBS], with minimum gross compressive strength of 5000 psi. [Textured/tumbled brick: Type FBA]
		2. Surface Texture: Matte unless otherwise noted on drawings: (To be selected by Architect/Engineer from manufacturer’s full range of available textures.)
		3. Colors:
			1. Color as selected by Architect/Engineer from available colors.
		4. Size: \_\_ inches wide by \_\_ inches high by \_\_ inches long, unless otherwise **indicated on the Drawings**.
		5. Special Sizes and Shapes: As required for window and door soldier coursing and custom sills where indicated, corners, piers, lintels, control joints, and other special applications to minimize cutting.
	1. MORTAR

Mortar shall comply ASTM C 270 and/or requirements of Section 04101

* 1. TIES AND ANCHORS

All ties and anchors shall be non-corrodible, or corrosion protected, and shall comply with the applicable local building codes. In the absence of local building codes comply with current adopted IBC or TMS 402.

1. EXECUTION
	1. PREPARATION
		1. Protect adjacent construction with appropriate means from mortar droppings and other effects of laying of brick masonry units.
		2. Thoroughly clean foundations of laitance, grease, oil, mud, dirt, mortar droppings, and other objectionable matter.
		3. Dry-stack (layout without mortar) horizontal brick spacing to work out coursing along all runs of brick prior to placing first unit in mortar. Do not use units that less than one-half of the full-length units at ends, corners, jambs, other terminations, and other discrete locations. One or two (generally) brick adjacent to the one-half length “starter” units may need to be shortened to maintain the appearance of a running bond installation. Runs of masonry that are not dimensioned in modules of 8” are likely to need adjustments of the brick lengths to maintain the half-bond (or other appearance) while maintaining a minimum length of one-half a typical unit.
	2. BRICK MASONRY UNITS
		1. Provide Custom Level of Quality in accordance with ASTM C216.
		2. Review brick material prior to installation and report any units deemed unsatisfactory to the manufacturer. Set aside (do not discard or remove from site) all units deemed unsatisfactory for further assessment by testing agency and/or brick manufacturer’s authorized representative, as deemed mutually acceptable. immediately notify supplier if quantities that are set aside are projected to create a shortfall of useable units. Installation or units placed in service constitutes mason’s acceptance of, and responsibility for, the brick quality
		3. Select units from multiple (at least 3) pallets or cubes to blend hues to create a uniform random pattern when placed in service to avoid patches of light and dark brick. Install patterns of color as directed where a specific blend of colors is specified. In all cases lay brick in a pattern acceptable to the Architect.
		4. Lay units in uniform and true courses, level, plumb, and without projections or offsets to adjacent units, unless indicated in the drawings. Adjust lengths of units as noted in Section 3.01.C and adjust head joint widths within the allowed tolerances noted in TMS 602 3.3 - F.1.b. (+ 3/8”; -1/4”) to maintain the appearance of running bond. Install vertical head joints for the full thickness of units, and humor units so that head joint mortar bonds to both adjacent masonry units. Best practice is to use a taught stringline to establish the level coursing lines and to maintain the flat plane of the face of the brick.
		5. Layout vertical coursing to use full height brick units to largest extent possible working from established horizontal working points of movement joints, and heads of windows, doors, louvers and similar items to fill the appropriate height. Vary bed joint width within the tolerances noted in TMS 602 3.3 - F.1.b. (+ 1/8”; -1/8”) between adjacent courses as necessary, maintaining a uniform appearance. Install units with full bed depth mortar joints.
		6. Embed veneer ties for a minimum of 1½ in. into the mortar joints with at least 5/8 in. exterior cover. Ties shall be mill galvanized, hot dip galvanized or stainless steel.
		7. Maintain cavity space between the brick veneer and the backing clear of mortar droppings, debris, and other obstructions and materials.
		8. When positions of units shift after mortar has stiffened, bond is broken, or cracks are formed, relay units in new mortar.
	3. MORTAR JOINTS
		1. Make joints straight, clean, smooth, and uniform in thickness.
		2. Tooling: Tool exposed joints when thumb print hard, slightly concave. Strike concealed joints flush.
		3. Joint Thickness: Make vertical and horizontal joints as required to achieve nominal dimensions on drawings and within tolerances listed in TMS 602 Section 3.3 F.
		4. Where fresh masonry joins totally or partially set masonry, clean and roughen set masonry before laying new units.
	4. BOND PATTERN
		1. Lay brick masonry units in running bond pattern, unless otherwise **indicated on the Drawings**.
	5. CUTTING BRICK MASONRY UNITS
		1. When possible, use full units of the proper size in lieu of cut units. Cut units as required to form chases, openings, for anchorage, and for other appurtenances. Adjust layout to avoid using units that are less than one-half length of a typical stretcher unit. Using several partial length units may be required when adjusting layout to maintain the desired bond pattern look.
		2. Cut and fit units with power-driven carborundum or diamond disc blade saw.
	6. CONTROL JOINTS / EXPANSION JOINTS
		1. Provide in masonry joints where **indicated on the Drawings**.
		2. Make full height and continuous in appearance.
		3. Stop horizontal reinforcing at expansion joints
		4. Insert control joint filler, when required, in joints as wall is constructed.
		5. Apply sealant as specified in Section 079000
	7. OTHER EMBEDDED ITEMS
		1. Build in wall plugs, accessories, flashings, pipe sleeves, and other items required to be built-in as the masonry work progresses.
	8. PATCHING
		1. Patch exposed brick masonry units at completion of the Work and in such manner that patching will be indistinguishable from similar surroundings and adjoining construction.
	9. MISCELLANEOUS
		1. Build in required items, such as anchors, flashings, sleeves, frames, structural steel, lintels, anchor bolts, and metal fabrications, as required for complete installation.
	10. WATER REPELLENT
		1. Apply breathable water repellent as specified in Section 071900.
	11. FIELD QUALITY CONTROL
		1. Employ and pay acceptable independent testing laboratory to perform installation inspections.
		2. Do not attach construction supports to masonry walls.
	12. CLEANING
		1. Exercise extreme care to avoid damaging the brick and to prevent mortar spills and splotches.
		2. Wash brick scum and mortar spills off the surface of the wall before they set, using least aggressive means and methods that produce acceptable results, and using products, equipment, materials, and methods, recommended by the brick manufacturer.
		3. Remove mortar stains from walls and clean installed masonry using the least aggressive products, equipment, means and/or methods that produce acceptable results by using products, materials, and methods, recommended by the brick manufacturer.
			1. Test proposed cleaning products, means, and methods in an inconspicuous area and receive approval prior to extending cleaning operations to the entire project.
		4. Remove scaffolding and equipment. Dispose of debris, refuse, and surplus material offsite legally.
		5. Remove efflorescence the occurs on exposed surfaces during construction activities with commercially prepared cleaning solution, from new unopened containers, using means and methods as recommended by the masonry unit manufacturer.
			1. Apply cleaning solution in strict accordance with cleaning solution manufacturer's printed instructions.
		6. Do not use straight muriatic acid or any other acid, diluted or undiluted, as a cleaning solution.
		7. Use the least aggressive equipment, means, and methods to clean the brickwork that provides acceptable results, satisfactory to the owner/user and designers/Architect, starting with “bucket and brush”.
		8. Use only cleaning substances recommended by the brick manufacturer from new unopened containers. Follow cleaning material manufacturer’s recommendations for equipment, means, and methods of cleaning.
		9. Do not use abrasive blast cleaning equipment, materials, and/or methods to clean the brick. Do not use high pressure water spray that will etch the brick.
	13. PROTECTION
		1. Provide temporary protection for exposed masonry corners subject to damage.
		2. Bracing:
			1. Adequately brace masonry walls over 8 feet in height to prevent overturning and to prevent collapse unless wall is adequately supported by permanent supporting elements, so wall will not overturn or collapse.
			2. Keep bracing in place until permanent supporting elements of structure are in place.
		3. Limited Access Zone:
			1. Establish limited access zone prior to start of masonry wall construction.
			2. Zone shall be immediately adjacent to wall and equal to height of wall to be constructed plus 4 feet by entire length of wall on non-scaffolded side of wall.
			3. Limit access to zone to workers actively engaged in constructing wall. Do not permit other persons to enter zone.
			4. Keep zone in place until wall is adequately supported or braced by permanent supporting elements to prevent overturning and collapse.
			5. Limit duration of vibration to time necessary to produce satisfactory consolidation without causing segregation.

 END OF SECTION