SECTION 042200

CONCRETE UNIT MASONRY

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 1 Specification with completely editable text; therefore, any portion of the text can be modified by the A/E preparing the Solicitation Package to suit the project.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
	1. SUMMARY
		1. Section Includes:
			1. Concrete unit masonry veneer.
		2. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.
		3. Related Sections:
			1. Section 040514 - Masonry Mortaring and Grouting: Mortar and grout.
	2. REFERENCES
		1. American Concrete Institute (ACI):
			1. ACI 530 - Building Code Requirements for Masonry Structures.
			2. ACI 530.1 - Specifications for Masonry Structures.
		2. American Society for Testing and Materials (ASTM):
			1. ASTM A 615 - Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
			2. ASTM C 55 - Specification for Concrete Brick.
			3. ASTM C 129 - Specification for Non-Load Bearing Concrete Masonry Units
		3. International Masonry Industry All- Weather Council (IMIAC): Recommended Practices and Guide Specifications for Cold Weather Masonry construction.
	3. SUBMITTALS
		1. Section 013300 - Submittal Procedures: Procedures for submittals.
			1. Product Data: Data for each masonry unit type, accessory, and other manufactured products indicated.
			2. Shop Drawings: Precast inserts and keys showing sizes, profiles, and locations of each precast unit required.
			3. Samples: Two samples of each masonry unit type to illustrate color, texture, and extremes of color range.
			4. Assurance/Control Submittals:
				1. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
				2. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.
			5. Submit layout of control joint placement for Contracting Officer's approval prior to starting any work.
	4. QUALITY ASSURANCE
		1. Perform Work in accordance with ACI 530 and ACI 530.1.
		2. Qualifications:
			1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
			2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.
		3. Mock-Up:
			1. Construct a sample wall panel of block masonry which will be exposed to view in the finished project, for approval by the Contracting Officer. Mock-up shall be as follows:
				1. Approximately 4 feet long by 3 feet (high, showing the proposed color range, texture, bond, mortar and workmanship. All block shipped for the sample shall be included in the panel.
				2. Erect panel in the presence of the Contracting Officer before installation of materials.
				3. When required, provide a separate panel for each type of block or mortar.
				4. Do not start work until Contracting Officer has accepted sample panel.
				5. Use panel as standard of comparison for all masonry work built of same material.
				6. Do not destroy or move panel until work is completed and accepted by Contracting Officer.
	5. DELIVERY, STORAGE, AND HANDLING
		1. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.
		2. Materials shall be delivered and stored so as to avoid damage from breakage, moisture, staining or damage of any kind.
	6. PROJECT CONDITIONS OR SITE CONDITIONS
		1. Environmental Requirements:
			1. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
			2. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.
2. PRODUCTS
	1. CONCRETE MASONRY UNITS
		1. Lightweight units used for non-load bearing walls, meeting requirements of ASTM C129, Type I. Provide units meeting fire resistance ratings.
		2. Lightweight units used for load bearing walls, meeting requirements of ASTM C90, Grade N, Type I. Provide units meeting fire resistance ratings.
		3. Units to be high precision block or split face block. Sizes as designated on Drawings. Colors selected from standard manufacturer’s colors.
		4. Special shaped units, U-blocks, etc., shall meet same specifications as adjacent units.
	2. CONCRETE BUILDING BRICK
		1. Concrete brick shall be solid units meeting ASTM C55, Type I, Grade N.
	3. MORTAR
		1. Specified in Section 040514.
	4. REINFORCING
		1. Horizontal reinforcing for concrete masonry units shall be mill galvanized, ladder type with 9 gauge parallel wires in each face and 9 gauge cross members a maximum of 24 inches on center, butt welded to side rods. Provide prefabricated corners and tees.
		2. Reinforcing bars for lintels shall meet ASTM A615, Grade 60.
	5. CONTROL JOINTS
		1. Joint filler shall be preformed neoprene or poly-vinyl chloride.
		2. Control joint placement in non-reinforced masonry:
			1. Vertical control joints shall be generally be located:
				1. At major changes in wall height.
				2. At changes in wall thickness.
				3. At control joints in foundations, in roof, and in floors.
				4. At chases and recesses for piping, columns, fixtures, etc.
				5. At one or both sides of wall openings.
				6. Near wall intersections.
				7. Near return angles in L, T, and U-shaped structures.
			2. Maximum spacing of control joints shall be in no case exceed 24 feet.
	6. CAVITY DRAINAGE PROTECTION MESH
		1. Recycled polyester/polyethylene trapezoidal-shaped 90% open mesh. Thicknesses to fit wall in accordance with the manufacturer's recommendations. Height as recommended by manufacturer, but not to exceed height of the top of the flashing. Product as manufactured by Mortar Net USA, Limited.
	7. WEEP-HOLE VENT FILLER
		1. Three dimensional, ultraviolet resistant, weave of polyester. Size matching full head joint size of the masonry unit unless shown otherwise. [White] [Brown] [Tan] [Gray] [Red] [Almond] color. Product as manufactured by Mortar Net USA, Limited or equal.
3. EXECUTION
	1. EXAMINATION
		1. Section 017300 - Execution: Verification of existing conditions before starting work.
		2. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
		3. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
		4. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.
	2. PREPARATION
		1. Provide temporary bracing during installation of masonry Work. Maintain in place until building structure provides permanent bracing.
		2. Lay out work to avoid use of less than 8 inch x 8 inch faced units at jambs in exposed work.
		3. Lintel block shall extend into side walls at jambs, at least 8 inches.
	3. FIELD QUALITY CONTROL
		1. Section 014000 - Quality Requirements: Procedures for testing.
		2. Test and evaluate grout in accordance with ASTM C1019. See Section 040514 - Masonry Mortaring and Grouting.
	4. INSTALLATION
		1. CMU Base Drainage Course: Lay base drainage course of CMU, consisting of 2 wythes separated by a cavity sized to accommodate through-wall flashing and mesh.
		2. Weep-Vents: Set weep-hole vent filler in place, aligning front of weep vent with exterior face of CMU. Apply adequate mortar to remainder of head joint, carefully removing excess mortar to prevent plugging of weep vent with mortar.
			1. Install weep-hole vent filler at drainage courses at base of wall and at all lintels and bond beams where through-wall flashing is required.
			2. Install weep-hole vent filler at top of wall and below lintels and bond beams to provide continuous air ventilation within wall.
		3. Mesh
			1. Select correct thickness of mesh for size of single-wythe CMU wall and thickness of cavity formed by drainage course units.
			2. Set mesh in cavity of drainage base course on either side of vertical reinforcing approximately 3 inches (7.5 cm) from the reinforcing on both sides. Set mesh against outside wythe units. No fasteners, adhesives are required, and mortar need not have set.
			3. Construct single-wythe CMU wall above the drainage course. Web-bed and face shell-bed the vertical grout cell to prevent migration of grout to adjoining cells.
			4. Grout reinforcing bar in place to within 1 inch (2.5 cm) of the top of the drainage course cavity. Install grout at reinforced cells in vertical lifts not to exceed 5 feet (1.5 m).
			5. Set mesh in similarly constructed drainage course at lintels and bond beams.
			6. Mesh may be compressed to allow insertion into cavities slightly smaller than its nominal thickness without affecting mesh or wall performance.
			7. When forcing mesh into a tight-fitting cavity, ensure that mortar has set sufficiently to allow masonry units to resist outward pressure from product.
			8. Protect installed product from damage during construction.
		4. Mortar shall be thoroughly mixed and kept moist but shall not be retempered for use after initial set.
		5. Lay only dry masonry units.
		6. Use masonry saw for cutting exposed surfaces. Cut units to provide 1/8 inch clearance around electrical boxes and similar items.
		7. Do not use chipped, cracked or broken units.
		8. Set units plumb, true to line, and level.
		9. Adjust units to final position while mortar is soft and plastic. If unit is displaced after mortar has stiffened, remove unit, clean joints and unit of mortar and reset with fresh mortar.
		10. When joining fresh work to set or partially set masonry clean exposed surface and remove loose mortar before laying fresh masonry.
		11. When necessary to stop a horizontal, run rack back one-half block length in each course, do not tooth.
		12. Unless indicated otherwise partitions shall extend from floor to bottom of floor or roof construction above.
		13. Where rated partitions run perpendicular to deck, fill voids at deck with grout.
	5. BOND
		1. Lay units in running bond with vertical joints centered on unit in course below unless indicated otherwise on drawings.
	6. MORTAR BEDS
		1. Lay hollow units with full mortar coverage on horizontal and vertical face shells. Provide full mortar coverage on horizontal and vertical face shells and webs where adjacent to cells or cavities to be filled with grout and on starting courses.
		2. Lay block with full horizontal and vertical joints.
	7. WIRE REINFORCEMENT
		1. Wire Reinforcements shall be placed as follows:
			1. Four inch concrete block walls with ends adjoining other partitions.
				1. Concrete block on slab on grade - continuous horizontal reinforcements 24 inches on center vertically (every third course).
				2. Concrete block on slabs above grade - Continuous horizontal reinforcement 16 inches on center vertically (every other course).
			2. Eight inch concrete block walls
				1. Concrete block walls on slab on grade - continuous horizontal reinforcement 16 inches on center vertically (every other course).
				2. Concrete block walls on slabs above grade - continuous horizontal reinforcements 24 inches on center vertically (every third course).
			3. Wire reinforcement shall be completely embedded in mortar or grout. Joints with wire reinforcement shall be at least the thickness of the wire.
			4. Wire reinforcement shall be lapped at least 8 inches at splices and shall contain at least one cross wire of each piece of reinforcement in the lapped distance.
	8. JOINTS
		1. Nominal thickness shall be 3/8 inch (9 mm) and uniform.
		2. Shove vertical joints tight.
		3. Strike joints flush in surfaces to be exposed or painted.
		4. Tool joints slightly concave in surfaces to be exposed or painted.
	9. BUILT-UP WORK
		1. Cooperate with other trades in building in items in masonry work.
		2. Grout solid around built-in items and in door frames.
	10. LINTELS
		1. Install rebars and grout solid as indicated. Provide temporary shoring for openings wider than 36 inches.
		2. Lintel blocks shall extend into side walls at jambs, minimum at 8 inches.
	11. CLEANING AND POINTING
		1. Dry brush masonry surfaces after mortar has set, at end of each day's work and after final points.
		2. Cut out and repaint defective joints.
		3. At final completion of masonry work fill holes in joints and tool to match adjacent work.
		4. Leave work and surrounding surfaces clean and free of mortar spots and droppings.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022