SECTION 042200 REINFORCED UNIT MASONRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

This section includes the construction of reinforced hollow core unit masonry, masonry veneer and special shapes. It includes all split face units and smooth face units, as well as masonry mortar and grout.

1.2 RELATED REQUIREMENTS

Section 03 20 00 - Concrete Reinforcement

Division 07 Section “Water Repellents” for water repellents applied to unit masonry assemblies.

Division 07 Section “Sheet Metal Flashing and Trim” for exposed sheet metal flashing.

Division 07 Section “Fire stopping” for fire stopping at tops of masonry walls and at openings in masonry walls.

Division 08 Section “Louvers and Vents” for wall vents (brick vents).

Products furnished, but not installed, under this Section include the following:

Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 05 Section “Structural Steel” and Division 13 Section “Metal Building Systems”.

Products installed, but not furnished, under this Section include the following:

Cast-stone trim, furnished under Division 04 Section “Cast Stone”.

Steel lintels for unit masonry, furnished under Division 05 Section “Metal Fabrications”.

Manufactured reglets in masonry joints for metal flashing, furnished under Division 07 Section “Sheet Metal Fabrications”.

Hollow-metal frames in unit masonry openings, furnished under Division 08 Section “Steel Doors and Frames”.

1.3 REFERENCE STANDARDS

A. ASTM International (ASTM), latest versions;

ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM C90 - Standard Specification for Load bearing Concrete Masonry Units

ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Pain and reinforced Masonry

ASTM C270 - Standard Specification for Mortar for Unit Masonry

ASTM C476 - Standard Specification for Grout for Masonry

ASTM C1019 - Standard Test Method for Sampling and Testing Grout

B. American Concrete Institute (ACI), latest versions:

ACI 530.1 - Specification for Masonry Structures

1.4 SUBMITTALS

A. Product Data: Submit sample of exposed masonry unit of each color and texture to be used to complete the work. Submit copies of test reports performed within last 12 months for representative specimens to be used in accordance with ASTM C 140 for strength, absorption and moisture content, and ASTM C 426 for drying shrinkage.

B. Test Reports: Submit copies of test reports for masonry units, mortar and grout.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Store masonry units above ground on level platforms, which allows air circulation under stacked units.

B. Cover and protect against wetting prior to use.

C. Handle units on pallets or flat bed barrows.

D. Store cementitious ingredients in weather-tight enclosures.

E. Waste Management and Disposal: As specified in Division 01 Section “Construction Waste Management” and as follows:

1. Separate and recycle waste materials in accordance with the Waste Management Plan and to the maximum extent economically feasible.
   a. Fold up metal banding; flatten and place in designated area for recycling.
   b. Collect wood packing shims and pallets; place in designated area.

2. Recycling: Undamaged, excess masonry materials are Contractor’s property and shall be removed from the Project site for his use.

3. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil contaminated sand, by crushing and mixing with fill material as fill is placed.

a. Crush masonry waste to less than 2 inches in greatest dimension.
b. Mix masonry waste with at least 2 parts specified fill material for each part masonry waste. Fill material is specified in Division 31 Section “Earth Moving”.
c. Do not dispose of masonry waste as fill within 18 inches of finished grade.

4. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste and legally dispose of off Owner’s property.

PART 2 - PRODUCTS

1.6 MATERIALS

A. Hollow Core Split Faced Scored Units: ASTM C 90.

B. Hollow Core Units: ASTM C90. Provide integral waterproofing.

C. Aggregate: Coordinate with architect.

D. Aggregate: Natural color at concealed block.

E. Mortar: ASTM C 270 “Standard Specification for Mortar for Unit Masonry,” Type S, f’c = 1800psi.

F. Grout: ASTM C 476 “Standard Specification for Grout for Masonry.”

G. Cell Reinforcing: ASTM A 615 “Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement,” Grade 60. Comply with Section 03 20 00.

H. Bond Beam and Lintel Reinforcing: ASTM A 615, Grade 60. Comply with Section 03 20 00.

I. Joint Reinforcing: Hot Dipped Galvanized, Standard Ladder Type 9 Gage Wire Dur-O-Wal or approved equal.

J. Control Joint Material: Rubber, neoprene or PVC joint material for use with standard sash block by Dur-O-Wal or approved equal.

K. Vertical Bar Positioner: Steel by Dur-O-Wal or approved equal.

L. Mortar Plasticizer: Easy Spread by American Colloid Company or approved equal.

PART 3 - EXECUTION

1.7 GENERAL

A. Provide jamb, header, lintel, bond beam, etc. units as required to complete the work. Lay only dry and unfrozen masonry units.

B. All exposed masonry shall be coordinated with architect for color, split face, scored finish unless noted otherwise on the drawings. Masonry not exposed to view may be smooth finished.

C. Discard any broken, chipped, or discolored masonry units.

D. Use masonry saws to cut and fit masonry units.

E. Lay units in running bond pattern with vertical joints located at center of masonry units in alternate course below.

F. Set units plumb, true to line and with level courses accurately spaced.

G. Adjust masonry unit to final position while mortar is soft and plastic.

H. Anchors, flashing accessories and similar devices shall be built in as masonry progresses.

1.8 MORTAR

A. Mix all cementitious materials and sand in a mechanical batch mixer for a minimum of 5 minutes. Adjust the consistency of the mortar to the satisfaction of the mason, but add only as much water as is compatible with convenience in using the mortar. If the mortar begins to stiffen from evaporation or from absorption of a part of the mixing water, re-temper the mortar immediately by adding water, and remix the mortar.

B. Mortar for exterior walls shall have waterproofing added in accordance with the manufacturer’s recommendations.

C. Addition of admixtures or re-tempering of mortar at the mixer to extend its use will not be permitted.

1.9 RE-TEMPERING

A. All mortar shall be used within 2-1/2 hours of initial mixing and no mortar shall be used after it has begun to set. Re-tempering of mortar in which setting has saturated will not be permitted. However, mortar shall be re-tempered, except as above qualified, as necessary to keep it plastic.

1.10 JOINTS

A. Provide joints 3/8 inch nominal thickness and tooled unless shown otherwise on drawings.

B. Construct uniform joints.

C. Units shall be placed with sufficient pressure to extrude mortar and provide a tight joint.

REINFORCEMENT

D. Reinforcement shall be secured against displacement prior to grouting at a spacing not greater than 4 feet.

E. Provide rebar lap lengths specified in the General Structural Notes on the drawings. Provide 6 inches minimum lap for all ladder type joint reinforcing.

1.11 GROUTING

A. Grout all cells, which are below grade.

B. Grout lintel blocks over masonry openings and each jamb of masonry openings.

C. Grout pours shall not exceed 5 feet in height.

D. Grout all cells solid, which contain reinforcing.

E. Grout shall have a slump range of 8 to 11 inches tested in accordance with ASTM C143.

F. Consolidate grout pours 12 inches or less in height by mechanical vibration or by puddling. Consolidate pours exceeding 12 inches in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred. Typically this occurs within 2-4 minutes of placement of grout.

G. Place grout within 1-1/2 hours from introducing water in the mixture and prior to initial set.

1.12 POINTING AND CLEANING

A. At completion of unit masonry work, fill holes in joints and tool.

B. Cut out and repoint defective joints.

C. Dry brush masonry surface after mortar has set, at end of each day's work and after final pointing.

D. Leave work and surrounding surfaces clean and free of mortar spots and droppings.

1.13 PROTECTION OF WORK

A. Protect sills, ledges, and offsets from mortar drippings or other damage during construction.

B. Remove misplaced mortar or grout immediately.

C. Cover top of walls with non-staining waterproof coverings when work is not in progress.

D. Provide adequate bracing during construction to prevent damage from wind loads.

1.14 WEATHER CONDITIONS

A. Do not place concrete masonry units when air temperature is below 20 degrees F.

B. For temperatures between 20 degrees F and 40 degrees F, sand and mixing water shall be heated to produce mortar temperatures between 40 degrees F and 120 degrees F. Mortar shall be maintained above 32 degrees F during placement.

C. Masonry shall be protected from freezing for 24 hours after placement.

1.15 FIELD QUALITY CONTROL

A. The Owner shall employ the services of a qualified testing laboratory to perform tests and submit test reports.

B. Concrete Masonry Units (CMU): Test in accordance with ASTM C 140. “Standard Test Methods of Sampling and Testing Concrete Masonry Units.” Six units shall be sampled and tested for each lot of 10,000 units or less delivered to the job site. Twelve units shall be sampled from each lot of more than 10,000 units and less than 100,000 units.

C. Mortar: By proportions according to ASTM C 780 “Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Masonry.”

D. Grout: Mold and test 4 test specimens in accordance with ASTM C 1019 “Test Method for Sampling and Testing Grout” from each day’s grout placement. Test grout slump prior to each day’s grouting process. Submit slump value with test specimen results. See General Structural Notes for required strength.

END OF SECTION 042200