SECTION 04810
REINFORCED UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. Concrete masonry or brick units
B. Reinforcement, anchorage, and accessories
C. Parged masonry surfaces

1.2 REFERENCES

A. ACI 530/ASCE 5/TMS 402– Building Code Requirements for Masonry Structures
B. ACI 530.1/ASCE 6/TMS 602- Specifications For Masonry Structures
C. ASCE 7-98 - American Society of Civil Engineers – Wind Loads (Chapter 6 only)
D. ASTM A82 - Cold-Drawn Steel Wire for Concrete Reinforcement
E. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products
F. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
G. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
H. ASTM A580 - Stainless and Heat-Resisting Steel Wire
I. ASTM A615 - Deformed and Plain Billet Steel Bars For Concrete Reinforcement
J. ASTM B370 - Cooper Sheet and Strip For Building Construction
K. ASTM C55 - Concrete Building Brick
L. ASTM C90- Load-Bearing Concrete Masonry Units
M. ASTM C126 - Facing Brick (Solid Masonry Units Made From Clay or Shale).
N. Florida Building Code.
O. TMS 402-92
P. TMS 602-92
Q. ASTM C652 - Hollow Brick (Hollow Masonry Units Made From Clay or Shale).
R. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Cold Weather Masonry Construction.
S. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Hot Weather Masonry Construction.
T. UL - Fire Resistance Directory

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Shop Drawings: Indicate bars sizes, spacing, locations, reinforcement quantities, bending and cutting schedules, supporting and spacing devices for reinforcement and accessories.
C. Product Data: Provide data for brick and masonry units and fabricated wire reinforcement.
D. Samples: Submit samples of decorative block, brick units to illustrate color, texture and extremes of color range.
E. Design Data: Indicate required mortar strength, masonry unit assembly strength in all planes with supportive test data.
F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with ACI 530 and ACI 530.1.
B. Test in accordance with ASTM C67, with the following additional requirements:
C. For engineered brick masonry, if the coefficient of variation of the compression samples tested exceeds 12%, obtain compressive strength by multiplying average compressive strength of specimens by: 1 - 1.5 (v/100 - .12) where v is the coefficient of variation of sample tested.
D. In case of a dispute, cost of tests of units after

1. General contractor job superintendent
2. Masonry subcontractor job superintendent
3. Masonry subcontractor foreman
4. At least two masons
5. Authorized representative of the brick supplier
6. Mortar material suppliers

C. Meet two weeks prior to commencing work of this section.

1.9 DELIVERY, STORAGE, AND HANDLING

A.

2.3 REINFORCEMENT AND ANCHORAGE

A. Single Wythe Joint Reinforcement: Ladder type; steel wire, hot dip galvanized to ASTM A641 Class 3 after fabrication, 3/16" side rods with 9-ga cross ties.
B. Reinforcing Steel: A615, Grade 40 or Grade 60; specified in Section 03300, unfinished.
C. Strap Anchors: Bent steel shape, hot dip galvanized to ASTM A123 B2 finish.

2.4 MORTAR AND GROUT

A. Mortar and Grout: As specified in Section 04100.

2.5 FLASHINGS

A. Copper: ASTM B370, cold rolled; 20 oz/sq ft, 0.027 inch thick; natural finish.
B. Galvanized Steel: ASTM A525, G90 finish, 24-ga core steel.
C. Stainless Steel: ASTM A167, Type 304, soft temper; 24-ga thick; smooth finish.
D. Provide dovetail; saw tooth, or other design to develop all direction bonding.
E. Lap Sealant: Butyl type.

2.6 ACCESSORIES

A. Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, cement fused joints.
B. Joint Filler: Closed cell polyvinyl chloride; oversized 50% to joint width; self-expanding.
C. Building Paper: No. 30 asphalt saturated felt.
D. Nailing Strips: Softwood, preservative treatment for moisture resistance, dovetail shape, sized to masonry joints.
E. Weep: Preformed plastic tubes, hollow.
F. Cavity Vents: Molded polyvinyl chloride grilles insect resistant.
G.

E. Embed wall ties in masonry back-up for bonding veneer at maximum 16" o.c. vertically and 36" o.c. horizontally. Place at maximum 3" o.c. each way around perimeter of openings, within 12" of openings.
F. Secure wall ties, rods, strap, anchors to back-up and embed into masonry veneer at maximum 16" o.c. vertically and 36" o.c. horizontally. Place at maximum 3" o.c. each way around perimeter of openings, within 12" of openings. Provide length to extend a minimum of 1½" into the exterior wythe.
G. Reinforce stack bonded unit joint corners and intersections with strap anchors 16" o.c.
H. Before placing brick, remove loose mortar, rust and other coatings from reinforcement

3.7 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

A. Install horizontal joint reinforcement 16" o.c.
B. Place masonry joint reinforcement in first and second horizontal joints above and below openings, and extend minimum 16" each side of opening.
C.

A. Install pre-cast concrete lintels over openings.
B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
C. Openings Up to 42" wide: Place two, No. 4 reinforcing bars 1" from bottom.
D. Openings From 42": Up to 78" wide: Place two, No. 5 reinforcing bars 1" from bottom.
E. Opening Over 78": Reinforce openings as detailed.
F. Do not splice reinforcing bars.
G. Support and secure reinforcing bars from displacement. Maintain position within ½" of dimensioned position.
H. Place and consolidate grout fill without displacing reinforcing.
I. Allow masonry lintels to attain specified strength before removing temporary supports.
J. Maintain bearing on each side of opening. Minimum bearing of 4" on concrete, 3" on steel and 8" on masonry.

3.11 ENGINEERED MASONRY

A. Lay masonry units with core cells vertically aligned and cavities between wythes clear of mortar and unobstructed.
B. Place mortar in masonry unit bed joints back ¼" from edge of unit grout spaces, bevel back and upward. Permit mortar to cure seven days before placing grout.
C. Reinforce masonry unit cores and cavities with reinforcement bars and grout.
D. Retain vertical reinforcement in position at top and bottom of cells and at intervals not exceeding 192 bar diameters. Splice reinforcement in accordance with Section 03200.
E. Wet masonry unit surfaces in contact with grout just prior to grout placement.
F. Grout spaces less than 2" in width with fine grout using low lift grouting techniques. Grout spaces 2" or greater in width with course grout using high or low lift grouting techniques.
G. When grouting is stopped for more than one hour, terminate grout 1½" below top of upper masonry unit to form a positive key for subsequent grout placement.
H. Low Lift Grouting: Place first lift of grout to a height of 16" and rod for grout consolidation. Place subsequent lifts in 8" increments and rod for grout consolidation.
I. High Lift Grouting:
    1. Provide cleanout opening no less than 4" high at the bottom of each cell to be grouted by cutting one face shell of masonry unit.
    2. In double wythe walls, omit every second masonry unit in one of the wythes for clean out and cell inspection purposes.
    3. In double wythe walls, construct vertical grout barriers or dams between the masonry wythes, with masonry units every 30' maximum.
    4. Clean out masonry cells and cavities with high-pressure water spray. Permit complete water drainage.
    5. Request inspection of the cells and cavities. Allow three days advance notice of inspection.
    6. After cleaning and cell inspection, seal openings with masonry units.
    7. Pump grout into spaces. Maintain water content in grout to intended slump without aggregate segregation.
    8. Limit grout lift to 60" and rod for grout consolidation. Wait 30 to 60 minutes before placing next lift.

3.12 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control and expansion joints.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
C. Size control joint in accordance with manufacturer’s instructions for sealant performance.

3.13 BUILT-IN WORK

A. As work progresses, install built-in metal door and glazed frames, fabricated metal frames,

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B. Without damaging completed work, provide protective

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