SECTION 04 2223
ARCHITECTURAL CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install architectural concrete unit masonry as described in Contract Documents.
   2. Furnish and install anchor bolts and embedded anchors as described in Contract Documents.
   3. Grout door frames installed in CMU walls.

B. Products Installed But Not Supplied Under This Section:
   1. Section 05 1223: Metal Lintels.
   2. Section 07 7126: Reglets.

C. Related Sections:
   1. Section 05 0523: Quality of anchor bolts.
   2. Section 08 1213: Steel Door Frames.
   3. Section 08 5113 or 08 5313: Windows.
   4. Section 23 3714: Wall vents and louvers.

1.2 REFERENCES

A. American Society For Testing And Materials:
   1. ASTM C 90-02, 'Standard Specification for Loadbearing Concrete Masonry Units.'
   2. ASTM C 331-04, 'Standard Specification for Lightweight Aggregates for Concrete Masonry Units.'

1.3 SUBMITTALS

A. Quality Assurance / Control: Manufacturer's certification that units meet compressive strength specified requirements.

1.4 QUALITY ASSURANCE

A. Job Mock-Ups:
   1. 4 feet 1 200 mm long by 3 feet 900 mm high of proposed color range, texture, bond, mortar, and workmanship. Show wall construction to be used on Project, including reinforcing, etc.
   2. Do not start work until Architect has accepted sample panel.
   3. Use panel as standard of comparison for masonry work built of same material.

B. Pre-Installation Conference: Schedule pre-installation conference during construction of mock-up.

1.5 DELIVERY, HANDLING, AND STORAGE

A. Check, carefully unload, and deliver material to site in such a manner as to avoid soiling, damaging, or snipping.

B. Store material on planks clear of ground and protect from damage, dirt, or disfigurement.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Mortar: Type 'S' mortar as specified in Section 04 0513.

2.2 MANUFACTURED UNITS

A. Concrete Masonry Units:
   1. Meet requirements of ASTM C 90, Type I, moisture control units, lightweight classification.
      a. 85 lbs per cu ft 126 kg per cu meter minimum weight classification.
      b. Lightweight aggregates conforming to ASTM C 331.
      c. Do not use re-crushed masonry units as aggregate.
   2. Outside Corners: Square-edged, except where bull nose is indicated on Drawings.
   3. Use special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, etc, as required.
   4. Uniform color and textures with unbroken edges. Smooth face, except where shown otherwise on Drawings.

2.3 ACCESSORIES

A. Construction Cleaning Compounds:
   1. Type Two Acceptable Products:
      c. Equal as approved by Architect before use. See Section 01 6000.
      e. Equal as approved by Architect before use. See Section 01 6000.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Site Tolerances:
   1. Masonry work shall be true to vertical and horizontal planes within 1/8 inch 3 mm in 10 feet 3 meters, non-cumulative.
   2. Maintain 3/8 inch 9.5 mm mortar joints throughout.

B. General:
   1. Make cuts proper size to accommodate work of other trades. Cut openings for electrical devices using cover plates no larger than can be covered by standard size plate. Replace unit masonry in which larger than necessary openings are cut. Do not patch openings with mortar or other material.
   2. Step back unfinished work for joining with new work. Use toothing only with Architect's approval.

C. Laying:
   1. Layout:
      a. Running bond except where indicated otherwise. Select brick so there is uniform distribution of hues.
      b. Use solid brick where brick coursing would otherwise show cores.
   2. Joints:
      a. Tool concave. Fill completely except where indicated differently.
      b. Do not tool until mortar has taken initial set.
      c. Point holes in joints. Fill and tool properly.
3. Concrete Masonry Units:
   a. Lay hollow masonry units dry. Do not lay masonry on frozen material.
   b. Align cells or cavities to preserve an unobstructed cavity for grouting.
   c. Full bedding required on both webs and face shell under first course. Other courses need only face shell bedding except where bedding is needed to control the flow of grout. Do not allow excess mortar to block cells receiving grout or foamed-in-place insulation.

D. Reinforcing:
   1. Reinforcing shall be free of material that may destroy bond.
   2. Masonry Reinforcing Steel:
      a. Place steel as shown on Drawings.
      b. Hold vertical reinforcing in place every 32 inches 800 mm.
      c. Splice 48 bar diameters minimum.
      d. Place reinforcing and dowels before pouring grout.
      e. Dowel vertical reinforcing bars out of structure below with bars of same size and spacing.
      f. Place horizontal bars in 8 inch 200 mm deep bond beam units at top of wall and at 48 inches 1 200 mm on center between. Continue bond beam units and reinforcement uninterrupted around corners and across wall intersections.
      g. Place special vertical bars of same size as normal vertical reinforcement at corners and jambs of openings and recesses where bond beams are interrupted and at beam bearing locations not otherwise detailed.
      h. Unless detailed otherwise, place special horizontal bars of same size as normal reinforcing above and below openings. Extend bars 24 inches 600 mm minimum beyond opening.

E. Grouting:
   1. CMU cells:
      a. Fully grout cells as follows:
         1) Cells containing reinforcing bars.
         2) All cells in concrete block foundations.
         3) All cells where sound control requirements are indicated.
         4) Bond beams and lintel blocks.
         5) Other cells indicated on Drawings to be fully grouted.
      b. Place grout in 48 inch 1 200 mm maximum lifts.
      c. Consolidate grout by means of a mechanical vibrator. Do not use cell reinforcing to rod grout.
      d. Before loss of plasticity, mechanically reconsolidate grout.
   2. Grout hollow metal door frames solid.
   3. Provide grout-leveling bed for support of wall plates.

3.2 CLEANING
   A. After mortar has hardened, wet masonry and clean with specified cleaning compound. Use stiff fibered brush for application. Rinse masonry surfaces with water immediately after cleaning. Leave masonry clean, free of mortar daubs, and with tight mortar joints.
   B. Remove and replace defective material at Architect's direction and at no additional cost to Owner.
   C. Clean up masonry debris and remove from site.

3.3 PROTECTION
   A. Protect masonry with cover during rainy weather.
   B. Cover work at end of each workday with tarpaulins if temperature is 25 to 40 deg F minus 4 to 4 deg C. If temperature is below 25 deg F minus 4 deg C, protect with heaters. Maintain temperature around masonry to 40 deg F 4 deg C minimum for 48 hrs if Type I, 24 hrs if Type III, or longer if required.
C. Brace masonry walls until walls attain adequate strength and are tied into building structure.

D. Do not allow structural loading of masonry walls until walls attain adequate strength.

END OF SECTION