

SECTION 04220
CONCRETE MASONRY UNIT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Material and labor requirements for concrete masonry unit construction.
- B. Products Installed But Not Furnished Under this Section:
 - 1. Section 04100 – Mortar and Grout
 - 2. Section 04150 – Masonry Accessories
 - 3. Section 04160 – Masonry Reinforcement

1.02 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.
- B. Bed Joint: The horizontal mortar joint upon which the next course is placed.
- C. Head Joint: The vertical mortar joint between abutting ends of the masonry units.
- D. Nominal Dimension: A dimension greater, by the thickness of a mortar joint, than the actual dimension for a masonry unit.
- E. Water Repellent: Resistant to penetration of water from rainfall.

1.03 REFERENCES

- A. ASTM:
 - 1. C 90-06b - Specification for Load-Bearing Concrete Masonry Units.
 - 2. E 514 - Test Method for Water Permeance of Masonry.
- B. International Code Standards (IBC-2003)
 - 1. 2103.1 - Hollow and Solid Load-Bearing Concrete Masonry Units
- C. National Concrete Masonry Association
 - 1. TEK 10-1 - Design of Concrete Masonry for Crack Control.
 - 2. TEK 19-2 - Details for Building Dry Concrete Masonry Walls.
 - 3. TEK 19-4 - Flashing - Concrete Masonry.

1.04 SYSTEM DESCRIPTION

- A. Concrete masonry units installed with mortar, and the cells of the concrete masonry units to be installed with steel and grout.

1.05 SUBMITTALS

- A. Submit [product data] samples to the Architect for approval prior to constructing job-site mock-ups, delivering materials to the site or commencing the work in this section [in accordance with Section 01300].

1. Concrete Masonry Unit Samples: Provide ___ samples of concrete masonry units, (stretcher units), to be used on the project showing range of texture and/or color variations of the exposed surfaces for units. Units provided to the project shall match these samples.

2. Mortar Color Samples: In accordance with Section 04100.

B. Submit warranties in accordance with Section 01700.

1.06 QUALITY ASSURANCE

A. Standards, Regulatory Requirements and Mock-Ups: In accordance with Section 04220 – Concrete Masonry Units.

B. Pre-Installation Conference: The purposes of this conference are:

1. To review the specifications, materials lists, drawings, and material application requirements.
2. To verify that all parties understand the meaning and intent of the contract documents.
3. Attendees: As designated by Architect.
4. See also Section 01200 – Project Meetings.

1.07 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping:

1. Transport and handle masonry units in such a manner as to prevent chipping and breakage.
2. Mortar admixture shall be delivered to the job site in manufacturer's original containers with seals unbroken and labeled with manufacturers batch number.

B. Storage and Protection:

1. Locate storage piles, pallets, stacks or bins to avoid or protect material from heavy or unnecessary traffic.
2. Store packaged materials in original, unopened containers in compliance with manufacturer's printed instructions.
3. Do not store water repellent in areas where temperature will fall below 20 degrees F.

1.08 PROJECT CONDITIONS

A. Cold Weather Requirements:

1. Fully protect concrete masonry units against freezing by a weather-tight covering, which shall also prevent accumulation of ice.
2. Do not lay concrete masonry units when the temperature of the surrounding atmosphere is below 40 degrees F or is likely to fall below 40 degrees F in the 24-hour period after laying, unless adequate protection is provided.

B. Hot Weather Requirements:

1. When the ambient air temperature exceeds 100 degrees F, or when the ambient air temperature exceeds 90 degrees and the wind velocity is greater than 8 mph, the masonry contractor shall implement hot weather protection procedures as submitted to the Architect and/or as outlined below.
2. Do not spread mortar beds more than 4'-0" ahead of placing block units.

3. Place block units within one minute of spreading mortar.

PART 2 PRODUCTS

2.01 MORTAR MATERIALS

- B. Mortar: In accordance with Section 04100.

2.02 GROUT MATERIALS

- B. Grout: In accordance with Section 04100.

2.03 MASONRY UNIT MATERIALS/MANUFACTURER

A. Concrete Masonry Units shall be manufactured by: Calstone Company, corporate contact information: 1155 Aster Ave, Sunnyvale, CA 94086, phone 408-984-8800, fax 408-984-2648. Manufacturing plants to include Sunnyvale plant or Galt plant.

B. Concrete Masonry Units shall be Calstone "Green Line" CMU mix design # manufactured with recycled aggregates in accordance with pre-approved and agreed upon mix design stating percentage of recycled aggregates.

1. Mix Design #44: Medium Weight, Contains 40% recycled pre-consumer aggregate.
2. Mix Design #46: Medium Weight, Contains 60% recycled pre-consumer aggregate.
3. Mix Design #34: Light Weight, Contains 40% recycled pre-consumer aggregate.
4. Mix Design #36: Light Weight, Contains 60% recycled pre-consumer aggregate.
5. Mix Design #3: Custom Mix Design (Call Calstone).

C. Concrete Masonry Units:

1. ASTM C90
2. Sizes and Shapes: As indicated here or on drawings.
3. Color of masonry units: As indicated here or on drawings. Color #'s
4. Texture of masonry units: As indicated here or on drawings.
5. Strength of masonry units:
6. Unit weight (pcf) of masonry units: As indicated here or on drawings.
7. Integral Water Repellent: As indicated here or on drawings.
8. Other specially molded units shall be supplied by the manufacture when required or as shown on Drawings.

PART 3: EXECUTIONS

3.01 INSPECITON

3.02 PREPERATION

3.03 MASONRY ERECTION

A. General requirements for Concrete Masonry Walls: See Section 04200 Concrete Unit Masonry for other general requirements.

B. Bonding:

1. Bond pattern shall be regular running bond.

2. Bond shall be plumb throughout face of wall.

C. Mortar Joints:

1. Exposed vertical and horizontal joints shall be tooled to produce a dense, slightly concave surface, which is well bonded to the block at edges.
2. Unexposed joints shall be struck flush.
3. Joints shall be straight, clean and a uniform 3/8-inch thickness on exposed wall face.
4. Solidly fill joints from the face of the unit to the depth of the face shell except where specified otherwise.
5. Full bedding to be provided for the first course on the foundation and wherever maximum strength is required.
6. Butter vertical head joints well and shove these joints tight so that the mortar bonds well to both units.
7. Full coverage to be provided on bed of face shells and webs surrounding cells to be filled.
8. Bee-holes or other open joints shall be filled and tooled with mortar while mortar is still fresh.
9. Pointing of mortar joints upon completion of work shall be in accordance with Section 04510.

D. Control Joints:

1. Provide control joints at locations indicated.
2. Construct control joints as detailed on drawings.

3.04 REINFORCEMENT, TIE, AND ACHCOR INSTALLATION

A. Horizontal Joint Reinforcing:

1. Reinforcing bars shall be installed in accordance with engineering specifications and approved drawings.

B. Vertical Reinforcing:

1. Reinforcing bars shall be installed in accordance with engineering specifications and approved drawings.

3.05 GROUT PLACEMENT

A. Grouting:

1. Reinforcing steel is to be in place and inspected before grouting starts.
2. Vertical cells to be filled shall have vertical alignment to maintain a continuous cell area.
3. Keep cell to be grouted free from mortar.
4. Fill cells solidly with grout in lifts not to exceed 4'-0 inch unless clean-outs are provided.
5. Grout may be poured by hand bucket, concrete hopper or through a grout pump.
6. Do not wet down grout space prior to pouring of grout.
7. Stop pours 1-1/2 inches below the top of the cell to form a key at pour points.

8. Grout shall be consolidated by mechanical vibration during placing before loss of plasticity in a manner to fill the grout space. Grout pours greater than 12 inches shall be reconsolidate by mechanical vibration to minimize voids due to water loss. Grout pours 12 inches or less in height shall be mechanically vibrated, or puddled.
9. Grout barrier below bond beams shall be continuous wire lath or other approved material.
10. Grout beams over openings and bond beams in a continuous operation.
11. Solidly grout in place bolts anchors and other items within wall construction.
12. Fully grout jambs and head of metal doorframes connected to masonry. Filling of frames shall be done as each 2'-0 inch of masonry is laid.
13. Use extreme care to prevent any grout or mortar from staining the face of the masonry.
14. Immediately remove grout or mortar, which is visible on the face of masonry.

3.06 PRESTRESSING TENDON INSALLATION AND STRESSING PROCEDURE

3.07 FIELD QUALITY CONTROL

3.08 CLEANING

A. Daily Cleaning: Soiled masonry from mortar and grout spills which will be exposed to view at the completion of the project shall be cleaned immediately with stiff fiber brushes until the wall is free of dropped or spattered mortar. Protect base of wall from mud splashes and mortar droppings. Protect the wall by setting scaffolds so that mortar is not deflected onto the wall. The masonry laying technique shall be such that mortar does not run down the face of the wall, or smear the masonry face after joints are tooled, cut off mortar tailings with the trowel and brush excess mortar burrs and dust from the face of the masonry. After the completion of the masonry work cleaning should be performed by either sand blasting or chemical treatment.

B. If Sandblasting for textural effects, apply "medium" sandblasting to precision masonry units, as demonstrated on samples approved by the architect, in a uniform and consistent texture.

3.09 PROTECTION

A. Furnish temporary protection for exposed masonry corners subject to injury.

END OF SECTION