Replace the term "Design Professional" with the identity of the design professional as defined in the General and Supplementary Conditions.

SECTION 042200.13 – CONCRETE UNIT VENEER MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Division 01 Specification Sections, Drawings, General Conditions, Supplementary General Conditions, and Special Conditions apply to this section.

1.2 SUMMARY

A. Section Includes:
1. Concrete masonry units (CMUs).
2. Mortar and grout.
3. Control joint materials.
4. Masonry joint reinforcement.
5. Ties and anchors.
6. Embedded flashing.
7. Miscellaneous masonry accessories.

B. Products installed, but not furnished, under this Section:

Edit the following list as needed.
1. Section 055000 Metal Fabrication for steel lintels and shelf angles for unit masonry.
2. Section 076200 Sheet Metal Flashing and Trim.

C. Related Sections:

Edit the following list as needed.
1. Section 042200 Concrete Unit Masonry
2. Section 042223.23 Prefaced Concrete Unit Masonry for Astra-Glaze-SW glazed masonry units.
3. Section 042300 Glass Unit Masonry for glass block.
4. Section 042713 Composite Unit Masonry.
5. Section 047200 Cast Stone Masonry.
6. Section 055000 Metal Fabrications for steel shelf angles.
7. Section 071900 Water Repellents for water repellents applied to unit masonry assemblies.
8. Section 076200 Sheet Metal Flashing and Trim.
9. Section 078413 Penetration Firestopping for firestopping at openings in masonry walls.
10. Section 078443 Fire-Resistive Joint Sealants for fire-resistive joint systems at heads of masonry walls.
11. Section 079200 Joint Sealants for sealing control and expansion joints in unit masonry.
12. Section 321413 Precast Unit Paving for interlocking concrete pavements.
13. Section 323223 Segmental Retaining Walls for dry-laid, concrete unit retaining walls.

1.3 SUBMITTALS

Edit the following list as needed.

A. Certificates of compliance with respective ASTM standards shall be submitted on all products specified herein.
   1. Concrete masonry units.
   2. Spec Mix preblended mortar: Include test report or batch data for verification of proportions of materials.
   3. Joint reinforcement.
   4. Anchors, ties, and metal accessories.

For samples required below, state quantity of each.

B. Samples for Verification: For each type and color of the following:
   1. Exposed concrete masonry units.

Include subparagraph below if colored mortar is specified.
   2. Mortar, for color selection or confirmation.

1.4 QUALITY ASSURANCE

A. Sample Panels: Construct an approximate [Width:] long by [Height:] panel for representation of completed masonry, joint tooling, design details, and workmanship. Comply with requirements in Division 01 Section "Quality Requirements" for mockups.

If it is desirable to demonstrate particular units or areas of critical detailing, specify them in the following subparagraph, otherwise delete it.
   1. The following shall be installed in the sample panel:
      a. [Specify units]
      b. [Specify details or conditions]

It is typically good practice to conduct preinstallation meetings to provide opportunity to clarify critical details, schedules, specification intent, inspections, etc. If the work under this section is of a minor nature, delete the following subparagraph.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination",

1.5 DELIVERY, STORAGE, AND HANDLING

A. All materials of this section shall be protected to maintain quality and physical requirements.

B. All masonry units shall be stored on the jobsite so that they are protected from rain, stored off-ground and kept clean from contamination. Prevent units from being otherwise wetted.

C. Store Spec Mix preblended mortar mix in manufacturer’s original, unopened, undamaged containers with identification labels intact, covered and protected from weather, or in a Spec Mix dispensing silo.

1.6 FIELD CONDITIONS

A. Securely cover tops of all unsheltered walls and partially completed walls when work is not in progress.

Cold-weather and hot-weather masonry construction is addressed in IBC Sections 2104.3 and 2104.4, respectively. Include and modify below as necessary.

B. Cold-weather procedures when ambient temperature falls below 40°F (4°C) or the temperature of masonry units is below 40°F (4°C):
   1. Wet or frozen units shall not be laid.
   2. Implement cold weather construction procedures in accordance with IBC Section 2104.3.

C. Hot-weather procedures when ambient temperature exceeds 100°F (38°C), or exceeds 90°F(32°C) with a wind velocity greater than 8 mph:
   1. Implement hot weather construction procedures in accordance with IBC Section 2104.4.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Concrete masonry units.
   1. Angelus Block Co., Inc.
      a. Sun Valley, CA (818) 767-8576
      b. Orange, CA (714) 637-8594
      c. Fontana, CA (909) 350-0244
      d. Gardena, CA (310) 323-8841
      e. Oxnard, CA (805) 485-1137
      f. Indio, CA (760) 347-3245

B. Preblended mortar.
   1. Spec Mix Preblended Mortar Mix, by E-Z Mix, Inc.

2.2 CONCRETE MASONRY UNITS

A. Concrete Masonry Units: ASTM C 90.

The majority of structural design is based on the mediumweight classification; therefore, the greatest availability in Southern California of structural sizes and shapes is in mediumweight. Edit below if structural design considers a different weight classification.

   1. Weight Classification: Mediumweight unless otherwise indicated.

Although it is common to call out colors and textures on elevation drawings or legend tables within the drawings set, it is helpful to also coordinate and list them here. Examples of Color: Sandstone, Warm Gray. Examples of Texture: Precision, Split Face, Burnished. If compatible mortar color other than natural gray is intended, specify in Article 2.8.

   2. Color(s) and texture(s):
      a. [Color] [Texture]

2.3 MORTAR MATERIALS

Preblended mortar below provides greater control and consistency than field-mixed. Spec Mix meets both proportion and properties requirements of ASTM C 270; specifying to proportions typically eliminates the need for mortar tests.

A. Spec Mix Masonry Mortar preblended factory mix: ASTM C 270, proportions.
   1. Portland cement: ASTM C 150
   2. Hydrated lime: ASTM C 207
   3. Aggregate for mortar: ASTM C 144.

B. Water: Potable.

C. Admixtures:
   1. The use of admixtures shall not be permitted except as specified herein, or as approved by the Architect or Engineer of Record and the Building Official.

2.4 REINFORCEMENT

A. Masonry Joint Reinforcement: ASTM A 951.
   1. Masonry joint reinforcement used in exterior walls shall be hot-dipped galvanized, conforming to ASTM A 153, Class B, minimum coating of 1.5 oz/ft^2.

For Seismic Design Categories E and F, include the following subparagraph:
   2. Provide continuous single wire joint reinforcement of wire size W1.7 (MW11).

2.5 TIES AND ANCHORS

A. All metal ties and anchors shall comply with ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602.

B. Sheet Metal Anchors and Ties: ASTM A 1008/A1008M.
   1. Sheet metal anchors and ties used in exterior walls shall be hot-dipped galvanized, conforming to ASTM A 153, Class B.

C. Wire Ties and Anchors: ASTM A 82.
   1. Wire ties and anchors used in exterior walls shall be hot-dipped galvanized, conforming to ASTM A 153, Class B, minimum coating of 1.5 oz/ft^2

A continuous water-resistive barrier is required where the backing is constructed of studs.

2.6 WATER-RESISTIVE BARRIER

A. Provide No. 15 asphalt felt, complying with ASTM D 226 for Type 1.

2.7 FLASHING MATERIALS

A. Provide metal flashing in accordance with Section 076200 Sheet Metal Flashing and Trim.

2.8 MORTAR MIXES

A. Type S Spec Mix Preblended, Dry Mortar Mix.
   1. Complies with ASTM C 270 Proportion Specification.

Natural gray is often used, including use with colored cmu. Specify colors, and if appropriate, mortar colors correlated to cmu colors, here.

   2. Natural gray color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to the start of masonry installation, verify all conditions pertinent to the performance of work in this Section are acceptable.
   1. Foundation shall be level and at correct grade such that the initial bed joint shall not be less than 1/4 inch nor more than 3/4 inch.

B. Masonry work shall not proceed until unsatisfactory conditions have been corrected or cleared by the governing authority.

3.2 INSTALLATION

A. Construct masonry veneer in compliance with ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602.

B. Cut units as required to fit; use motor-driven masonry saw. Install cut units with cut surfaces edges concealed as much as possible.

C. Lay dry units only, unless otherwise approved.

D. Select and arrange units for exposed masonry to produce a uniform blend of colors and textures.
   1. Mix units from several pallets or cubes as they are placed.

3.3 LAYING MASONRY WALLS

A. All masonry shall be laid true, level, plumb, and in accordance with the drawings.

B. Masonry shall be laid in running bond unless otherwise indicated.

Running bond is the typical pattern. If stack bond or another pattern is to be used, delete paragraph above and edit paragraph below, or refer to drawings. Otherwise delete the following two paragraphs.

C. Exposed masonry shall be laid in [stack bond][or other] unless otherwise indicated.

D. Install built-in items specified in this and other Sections as work progresses.

3.4 MORTAR BEDDING AND JOINTING

A. Lay solid units with full head and bed joints. Do not fill head joints by slushing with mortar. Bed joints shall not be furrowed deep enough to produce voids.

If another joint profile is used, revise first paragraph below or show on Drawings. Note that some decorative joint profiles are not recommended for weather exposure; consult your Angelus Block representative.

B. All mortar joints on exposed walls shall be concave, unless otherwise indicated, and struck to produce a dense, slightly concave surface well bonded to the surface of the masonry unit.

3.5 MASONRY JOINT REINFORCEMENT, TIES, AND ANCHORS

A. Embed joint reinforcement, ties, and anchors with minimum 5/8 inch cover to outside face.

For Seismic Design Categories E an F, include the following subparagraph:

B. Place single wire joint reinforcement at maximum spacing of 18 inches on center vertically. Mechanically attach anchors to the joint reinforcement with clips or hooks.

3.6 WATER-RESISTIVE BARRIER

A. Attach No. 15 asphalt felt to the studs or sheathing, incorporating flashing as shown on the drawings.

3.7 CONTROL AND EXPANSION JOINTS

A. Construct control joints as detailed on the drawings as masonry progresses.

Include the following article if the structure is classified as Occupancy Category IV and under IBC, or if Occupancy Category II, III, or IV under CBC. (Both codes require Special Inspection Level 1 for the listed occupancy categories.)

3.8 FIELD QUALITY CONTROL

Statement of Special Inspections per IBC Sections 1704.1.1 and 1705.

A. Inspection tasks and frequency shall be performed in accordance with the Statement of Special Inspections.

3.9 POINTING, AND CLEANING

A. Point and tool holes in mortar joints to produce a uniform, tight joint.

B. During construction, minimize any mortar stains on the wall. Immediately remove any staining or soiling that occurs.

1. For precision or textured units, except as noted below, clean masonry by dry brushing before tooling joints.
2. For burnished concrete masonry units, immediately remove any green mortar smears or soiling with a damp sponge

C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

Light sandblasting is a common, non-chemical means of final cleaning of stains and efflorescence prior to the application of water repellents. Water blasting is sometimes used, but saturating the unprotected masonry can often lead to further development of efflorescence.

If other chemical means are desired, edit this subparagraph according to manufacturer's recommendations, and specify the product in Part 2.

1. Clean exposed cmu walls with a light sandblast. All nonmasonry work near the area to be sandblasted shall be covered or protected before the sandblasting starts. Care shall be taken to avoid contamination to areas that are not to be sandblasted.
   a. Glazed, burnished, or pre-finished masonry units, shall be protected from sandblast operations.

D. At completion of masonry work, remove all scaffolding and equipment used during construction, and remove all debris, refuse, and surplus masonry material from the site.

Include the following article for jobsite sandblasting when a sandblasted texture is specified for design purposes. This is different than light sandblasting for cleanup; sandblasting for textural effects is incorporated with the cleanup sandblasting. Specify "light", "medium", or "heavy" texture, or other defined reference for the desired effect.

3.10 JOBSITE SANDBLASTING

A. Sandblast for textural effects as indicated on the drawings.

B. Apply ["medium" or other definition] sandblasting to precision masonry walls at indicated areas, as demonstrated on approved samples, in uniform and consistent texture.

An application of water repellent is a critical component of the masonry wall and may be included here for emphasis, coordinated with Section 071900 Water Repellents. Note that veneer design takes into account water resistance by means of the air space and water-resistant felt over studs, it is recommended to apply an exterior water repellent for concrete masonry to both increase water resistance and protect the masonry from weathering.

3.11 WATER REPELLENT APPLICATION

A. Cleaning shall be complete and accepted by the Architect, and wall surfaces shall be thoroughly dry.

B. Apply water repellent in strict accordance with Section 071900 and the water repellent manufacturer's instructions.

END OF SECTION 042200.13