Revised 11/2021
[NOTE TO SPECIFIER: PLEASE ENABLE VIEWING OF HIDDEN TEXT. Notes are interspersed throughout to offer explanations, guidance, and background information.]

Abbreviations used in notes:

CBC: 2019 California Building Code

TMS 402: TMS 402, 2016 Building Code Requirements for Masonry Structures and Commentary

TMS 602: TMS 602, 2016 Specification for Masonry Structures

This guide specification is based upon TMS 602, an adapted CSI-format, three-part specification incorporated by reference in the CBC.

Notes appearing in green are related to sustainable design.

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

SECTION 04 22 00 – CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Division 01 Sections, Drawings, General Conditions, Supplementary Conditions, Special Conditions, and Quality Control apply to this section. If desired, reference specific sections in 1.2 C below.

1.2 SUMMARY

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

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

Edit the following as needed

   1. Section 05 50 00 Metal Fabrication for steel lintels and shelf angles for unit masonry.

2. Section 07 62 00 Sheet Metal Flashing and Trim.

C. Related Requirements:

Edit the following list as needed.

1. Section 04 05 13 Masonry Mortaring.
2. Section 04 05 16 Masonry Grouting.
3. Section 04 05 19 Masonry Anchorage and Reinforcing.
4. Section 04 05 23 Masonry Accessories.
5. Section 04 22 00.13 Concrete Unit Veneer Masonry.
6. Section 04 22 23.23 Prefaced Concrete Unit Masonry for Spectra Glaze glazed masonry units.
7. Section 07 19 00 Water Repellents for application to unit masonry assemblies.
8. Section 07 62 00 Sheet Metal Flashing and Trim for exposed sheet metal flashing.
9. Section 07 84 13 Penetration Firestopping for firestopping at openings in masonry walls.
10. Section 07 84 43 Fire-Resistive Joint Sealants for fire-resistive joint systems at heads of masonry walls.
11. Section 07 92 00 Joint Sealants for sealing control and expansion joints in unit masonry.
12. Section 32 14 13.13 Interlocking Precast Unit Paving.

1.3 REFERENCES

A. TMS 602 2016 Specification for Masonry Structures.

B. ASTM International (latest versions):

1. ASTM A36/A36M Standard Specification for Carbon Structural Steel.
2. ASTM A82/A82M Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
3. ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. ASTM A185/A185M Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
5. ASTM A307 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
6. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
7. ASTM A641/A641M Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
8. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.
9. ASTM A884/A884M Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.
10. ASTM A899 Standard Specification for Steel Wire Epoxy-Coated.
11. ASTM A951/A951M Standard Specification for Masonry Joint Reinforcement.

12. ASTM A1008/A1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
13. ASTM C90 Standard Specification for Loadbearing Concrete Masonry Units.
14. ASTM C140/C140M Standard Test Method for Sampling and Testing Concrete Masonry Units.
15. ASTM C150/C150M Standard Specification for Portland Cement.
16. ASTM C270 Standard Specification for Mortar for Unit Masonry.
17. ASTM C476 Standard Specification for Grout for Unit Masonry.
18. ASTM C595/C595M Standard Specification for Blended Hydraulic Cements.
19. ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Concrete. Include only if specified in 2.3B, Grout for masonry
20. ASTM C989/C989M Standard Specification for Slag Cement for Use in Concrete and Mortars. Include only if specified in 2.3B, Grout for masonry
21. ASTM C1019 Standard Test Method for Sampling and Testing Grout.
22. ASTM C1314 Standard Test Method for Compressive Strength of Masonry Prisms.
23. ASTM C1586 Standard Guide for Quality Assurance of Mortars.
24. ASTM C1611/C1611M Standard Test Method for Slump Flow of Self-Consolidating Concrete. Include only if specified in 2.3B, Grout for masonry
25. ASTM C1714/C1714M Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.

The Statement of Special Inspections per CBC Section 1704.3 is prepared by the design professional in responsible charge to specify tests and inspections required before and during construction. Details of the program and its specified tests should reside there and not be duplicated here. Responsibility for testing and inspections rest with the owner or owner's agent and are performed by agencies selected by them. See *Code References: CMU Testing Responsibility*, available from https://www.angelusblock.com/resources/concrete_masonry_code_reference.cfm.

C. Statement of Special Inspections

1.4 SYSTEM DESCRIPTION

f'_m is the design strength of the masonry wall. It is not the individual CMU strength. Please see https://www.angelusblock.com, CMU Basics, Strengths, for more information on the relationship between unit strengths and the design strength.

Specification of Quality Assurance items is dependent on the f'_m value. See Quality Assurance below.

It is recommended throughout that specific criterion of strength, weights, types, etc. are centralized in the structural specifications commonly found in the S-1 sheet. This avoids conflicts and minimizes the chances for errors.

A. Provide materials to achieve the net compressive strength of concrete unit masonry equal to or greater than the f'_m value stated in the S-1 sheet.

1.5 QUALITY ASSURANCE

Since testing is the responsibility of the owner, the masonry contractor's responsibility is to assist the owner's agent as needed, including the construction of prisms if required. Listing each test and its frequency here is superfluous and not part of the mason's contract, which otherwise includes adherence to this section.

Background info for consideration in developing the statement of special inspections (See *Quality Assurance* available from https://www.angelusblock.com/resources/concrete_masonry_code_reference.cfm):

The CBC incorporates TMS 402 and TMS 602 for inspections and verifications of masonry construction. TMS 602 Table 3 - Minimum Verification Requirements shows the three levels of Quality Assurance: Level 1 (for masonry veneer; see respective guide specification), Level 2 (for engineered masonry in Risk Categories I, II, or III), and Level 3 (for engineered masonry in Risk Category IV). Levels 2 and 3 each require preconstruction verification of f'_m, by means of either the unit strength method or prism test method. The unit strength method is "easier" in that one can reference a table for the values and simply test CMU and grout, typically in less time than needed for prisms. Where f'_m = 2000 net psi, the unit strength method is preferred.

However, when f'_m values exceed 2500 net psi, prism testing makes more sense as the values from the unit strength table – which are very conservative – may negatively impact the project. Excessively high strength requirements for CMU will typically require special order products with mix designs that may affect color and texture, altering the appearance versus originally selected samples. Exceptionally high CMU strength values may not be available in Medium Weight or Lightweight densities or may not be available at all. The expense of prism testing could save overall costs by utilizing standard units (which typically test much higher than their minimum strengths), rather than more expensive special high-strength units, to achieve the specified strength of masonry.

Specify only one verification method – either Unit Strength OR Prism Test – not both!

A. Preconstruction Testing.
   1. Cooperate with owner's agent as needed to facilitate sampling and inspections in accordance with TMS 602 and the Statement of Special Inspections.

Include only if prism test method is specified. Typical quantity is three.

   2. Construct three prisms for each type of construction.

B. Sample Panels: Construct an approximate [Width:] wide by [Height:] high 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, otherwise delete it.

   1. Install the following 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, the following may be deleted.

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

1.6 SUBMITTALS

A. Obtain written acceptance of submittals prior to use of the following:
1. Submit mix designs and test reports:
a. Preblended mortar:
1) Mix design indicating types and proportions of materials according to proportion specification of ASTM C270, or
2) Mix designs and mortar tests performed in accordance with the property specification of ASTM C270.

TMS 602 1.5 B.1.b offers two options for grout: proportion specification – grout conforms to ASTM C476 (requires submittal of mix design to indicate proportions; no compression testing intrinsically required), OR property specification – grout compressive strength equals or exceeds the f'm, but not less than 2,000 psi. Include the following only if a property specification (ASTM C476 4.2.1.2) is given for grout, or if f'm > 2000 psi (per TMS 602 2.2 B); otherwise delete it.

b. Conventional grout:
1) Mix design indicating types and proportions of materials according to proportion requirements of ASTM C476, or
2) Mix design and grout strength test performed in accordance with ASTM C476.

Include the following if self-consolidating grout is specified.

c. Self-consolidating grout:
1) Compressive strength tests performed in accordance with ASTM C1019, and slump flow and visual stability index (VSI) as determined by ASTM C1611/C1611M.

2. Submit material certificates for each of the following certifying compliance:
a. Concrete masonry units.
b. Steel reinforcing bars.
c. Anchors, ties, fasteners, and metal accessories.
d. Preformed control joint gaskets.

For samples required below, state quantity of each.

B. Samples for Verification: For each face design, color, and texture of the following:
1. Exposed concrete masonry units.

Include the following if colored mortar is specified.

C. Mortar, for color selection or confirmation.

1.7 SUSTAINABLE DESIGN SUBMITTALS

The EPDs and HPDs for Angelus Block CMU cover the great majority of specified CMU and all core product lines. If this specification includes CMU with special aggregate blends or other characteristics not included in Angelus Block publications, please consult your Representative to review applicability of the EPDs.

Carbon impacts for Angelus Block CMU, optimized and now branded as CarbonKind™, are substantially less than industry baselines. See user notes under PART 2 – PRODUCTS.

A. Environmental Product Declaration (EPD) meeting the following criteria:
   1. Type III third party verified.
   2. Specific to product and plant location.

B. Health Product Declaration (HPD) for specified products meeting the following criteria:
   1. Ingredients reported to 100 ppm.
   2. Conforming to Health Product Declaration® Open Standard Version 2.1.1 or later.

See notes for recycled content in Paragraph 2.2 A.2.c.

C. Recycled Content
   1. Manufacturer's certification of type and percentages of recycled content.

D. Manufacturing and Material Source Locations: Include in manufacturer's certification for CMU supplied under this Section:
   1. Location of CMU production plant.
   2. Locations of raw material sources for ingredients.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect all materials of this section to maintain quality and physical requirements.

B. Store all masonry units on the jobsite so that they are protected from rain, stored off-ground and kept free of contamination.

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.

1.9 FIELD CONDITIONS

A. Cover top of unfinished masonry work to protect it from the weather.

Cold-weather and hot-weather masonry construction is addressed in TMS 602 Article 1.8 C and 1.8 D. Include and modify below as necessary.

B. Implement cold-weather procedures in accordance with TMS 602 when ambient temperature falls below 40°F (4°C).

C. Implement hot-weather procedures in accordance with TMS 602 when ambient temperature exceeds 100°F (38°C), or exceeds 90°F(32°C) with a wind velocity greater than 8 mph.

PART 2 -PRODUCTS

Note: we often see specifications for a product covered by an ASTM standard also list its raw material constituents, along with their respective ASTM standards. This is not only redundant, it is not recommended as it may be unnecessarily limiting. For example, CMU may be made with C150 Portland cement, or with C595 blended cement. By stating presumed CMU ingredient ASTMs, specifically C150, the project has limited itself from an eco-friendlier product with equal or better characteristics.

Angelus Block is first in our region to move to a blended cement that reduces CO_2 impact, resulting in CarbonKind™. It is a low impact CMU with substantial reductions in CO_2e. The average impacts as shown in Angelus Block Medium Weight EPDs are **42% and 61% less**, respectively, than the Carbon Leadership Forum's 2021 Material Baselines for Typical and Baseline CMU values.

TMS 602, Specification for Masonry Structures, is included by reference in the CBC. It does not list sub-ASTMs, simply stating the ASTM standard specific to the material discussed. Each ASTM standard lists within it allowed ingredients and their respective ASTMs.

It is recommended throughout that specific criterion of strength, weights, types, etc. are centralized in the structural specifications commonly found in the S-1 sheet. This avoids conflicts and minimizes the chances for errors.

2.1 MANUFACTURER

A. Basis of design 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
      g. Bakersfield, CA (661) 858-2848

B. Preblended mortar:
   1. SPEC MIX Preblended Mortar Mix, by E-Z Mix, Inc.
      a. Sun Valley, CA (818) 768-0568

b. Rialto, CA (909) 874-7686

Include the following if specified in 2.3 D.

C. Grout additive:
1. PRE-MIX Products Grout Additive, by E-Z Mix, Inc.
a. Sun Valley, CA (818) 768-0568
b. Rialto, CA (909) 874-7686

2.2 CONCRETE MASONRY UNITS

A. Concrete Masonry Units conforming to ASTM C90.
1. CarbonKind concrete masonry units by Angelus Block Co., Inc.

The majority of structural design is based on the Medium Weight classification. Other weight categories are Normal Weight (heaviest) and Lightweight (most expensive). This attribute should be stated on the S-1 sheet.

While it is common to call out colors and textures on elevation drawings or legend tables within the drawings set, it may be helpful to also coordinate and list them here, BUT ONLY IF UPDATED AND SYNCHRONIZED WITH DRAWING CALLOUTS. Otherwise, delete, or indicate as in drawings. Examples of Color: Sandstone, Warm Gray. Examples of Texture: Precision, Split Face, Burnished, and Shotblast. If compatible mortar color other than natural gray is intended, specify in paragraph 2.3 A.

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

In addition to the Sustainable Design Submittals in Article 1.7, which report the “as-is” state of submitted CMU, you may include specified green characteristics here. However, before doing so, please consult with your Angelus Block Representative to ensure the specified CMU will meet all other intended characteristics, including aesthetics.

3. Sustainable Characteristics:

See discussion for paragraph 1.7 A.

a. Concrete masonry units shall be included in a current Type III Environmental Product Declaration.
b. Concrete masonry units shall have an associated Health Product Declaration.

Recycled content: Though most production plants and products contain recycled content, the amounts vary by plant and product. Custom percentages may be possible depending upon size of the project and use of the product; please consult your Angelus Block Representative.

Please note that as recycled content increases, the variations in color and texture may also increase. For architectural CMU, a balance must be reached between high recycled content and more pronounced variation. NOTE: higher value recycled content may be achieved by utilizing high cement replacement in masonry grout; see discussion for paragraph 2.3 B.

c. Recycled content in specified CMU shall be [percent or range]. DO NOT SPECIFY THIS UNTIL CONSULTING WITH YOUR REPRESENTATIVE. Include range, minimum, or maximum; multiple entries here may be appropriate depending on types of CMU specified. **Note it will likely be more practical to remove this and report recycled content based on the values certified in the contractor's submittal package**.

Regional material criteria of "within 500 miles" under the 2019 California Green Building Standards Code (CALGreen) is a certainty with Angelus Block CMU. *Everything* – raw materials and production – is well within 500 miles of our service region.

LEED v4 changes applicability, definition, and distance. Current language stipulates *ALL* raw material sources and production locations must be within 100 miles of the project, without any calculations for portions of raw materials. It's all or nothing. Many product mix designs incorporate aggregates which simply are not available within 100 miles of the metroplex regions. Therefore, if this project is seeking certification under LEED v4, please consult your Representative before stating this as a required characteristic. Otherwise, it may be included for CALGreen as follows.

d. Obtain CMU produced, and with raw materials sourced, within 500 miles of the project site.

2.3 MORTAR AND GROUT MATERIALS

The following items may instead be included in their respective specification Sections: 04 05 13 Masonry Mortaring, 04 05 16 Masonry Grouting. If so, replace details below with a reference to the appropriate Section.

Preblended mortar below provides greater quality control and consistency than field-mixed. SPEC MIX meets both proportion and properties requirements of ASTM C270 and meets ASTM C1714 for preblended dry mortar mix for unit masonry. C1714 5.2.1 defaults to property requirements of C270.

NOTE TO USERS OF AIA MASTERSPEC 042000: This MasterSpec and its accompanying Evaluations, includes and discusses mortar types M, S, N, and O, and their applicability to a variety of conditions. This is problematic for projects in California under the 2019 CBC, and by reference, TMS 402. (See *Information for users of AIA MasterSpec 042000*, available from your Angelus Block representative, for specifics.)

Most of California is in Seismic Design Category D, for which "participating elements," or structural elements, must utilize either Type S or Type M mortar ONLY (TMS 402 7.4.4.2.2). Therefore, to eliminate multiple mortar types on the project, the pragmatic default mortar for our region is Type S, unless Type M is specified by structural design.

Mortar type (i.e., Type S, Type M) should be stated in the S-1 sheet.

A. SPEC MIX Masonry Mortar preblended factory mix conforming to ASTM C270 and ASTM C1714/C1714M. Mortar Type as specified in S-1. (or, if a separate Section is included for

mortar, append the foregoing with “, in accordance with Section 04 05 13 Masonry Mortaring", and delete the following color specification)

Natural gray is often used, including use with pigmented CMU. If compatible mortar colors are desired, specify here. Consult your Angelus representative or **https://www.angelusblock.com/colors_and_textures.cfm** Select a Special Order Medium Weight color chart, then click on any color swatch to see available textures for that color and recommended mortar color(s). For stock colors (Sandstone, Spice, and Harvest), specify the stock mortar color, "Medium Tan". SPECIFY HERE ONLY IF UPDATED AND SYNCHRONIZED WITH DRAWING CALLOUTS. Otherwise, delete.

1. Natural gray color.

Any attributes for masonry grout such as strength and supplemental cementitious material(s) should be stated in the S-1 sheet.

B. Grout for masonry conforming to ASTM C476. (or, if a separate Section is included for grout, append the foregoing with ", in accordance with Section 04 05 16 Masonry Grouting)

Fly ash, or fly ash combined with ground granulated blast furnace slag (GGBFS), may be used as a partial Portland cement replacement, and is a practical means of introducing significant recycled content into the masonry wall without adversely affecting aesthetic control of exposed masonry units. And, since grout is approximately 50% or more of the volume of solid grouted concrete masonry, the sustainability benefit is substantially greater than recycled content in CMU alone. Studies undertaken by numerous industry organizations have shown:

- Grouts with up to 30% by weight of Portland cement replaced with Class F fly ash can be treated as conventional masonry grout.
- Grouts with 40% to 50% by weight of Portland cement replaced with Class F fly ash are viable; compressive strength should be tested at 42 days and should not have a significant effect on the overall project schedule.
- Grouts with 50% to 80% by weight of Portland cement replaced by fly ash (25%) and GGBFS (varying %) are also viable.
- These grouts have other benefits, such as increased workability.

Availability and specific mix designs will vary by local grout suppliers, who should be consulted for specifications. Please contact your Angelus Block representative for more information.

Include fly ash and/or GGBFS below if used in masonry grout.

1. Fly ash: ASTM C618.
2. Ground granulated blast furnace slag: ASTM C989/C989M.
3. Sustainable Characteristics
   a. Masonry grout shall contain [type and percentage]. include type of SCM(s) and replacement percentages here

C. Water: Potable.

D. Admixtures:
   1. Do not use admixtures except as specified herein, or as approved by the Design Professional and the Building Official.

The admixture below may be recommended to decrease grout shrinkage and compensate for volume loss due to water absorption. Field addition of admixtures is not permitted for self-consolidating grout.

   2. PRE-MIX Products Grout Additive manufactured by E-Z Mix, Inc. Use per manufacturer's specifications.

2.4 REINFORCEMENT AND METAL ACCESSORIES

The following items may instead be included in their respective specification Sections: 04 05 19 Masonry Anchorage, 04 05 23 Masonry Accessories. If so, replace details below with a reference to the appropriate Section.

Items below are typically used. Revise as required by structural design.

A. Provide metal reinforcement and accessories conforming to TMS 602 Article 2.4 (if separate sections are included for these items, append the foregoing with ", in accordance with Section 04 05 19 Masonry Anchorage and Reinforcing and Section 04 05 23 Masonry Accessories).

2.5 FLASHING MATERIALS

A. Provide metal flashing in accordance with Section 07 62 00 Sheet Metal Flashing and Trim.

2.6 MISCELLANEOUS MASONRY ACCESSORIES

A. Provide masonry accessories conforming to TMS 602 Article 2.5.

2.7 MASONRY CLEANER

A. Use potable water and detergents to clean masonry unless otherwise approved.

B. Do not use acid or caustic solutions unless otherwise approved.

2.8 MIXING

A. Mortar:

1. Mix SPEC MIX Masonry Mortar preblended factory mix per manufacturer's recommendations.

B. Conventional grout:

Grout for masonry requires more water than other types of concrete. A significant amount of water is absorbed by the CMU; sufficient water must remain in the grout to facilitate flow, consolidation, and hydration.

1. Mix grout to a consistency that has a slump between 8 and 11 inches per TMS 602 Article 2.6 B.

C. Self-consolidating grout:
1. Job-site proportioning of self-consolidating grout is not permitted.
2. Do not add water at the job site except in accordance with the manufacturer's recommendations.

2.9 Fabrication

A. Fabricate reinforcement per TMS 602 Article 2.7 A.

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 in accordance with TMS 602 Article 3.1.

3.2 PREPARATION

A. Clean and prepare reinforcement, anchor bolts, and foundation, and construct grout spaces in accordance with TMS 602 Article 3.2. Do not wet units before laying, unless otherwise required. Wet cutting is permitted.

B. Provide cleanouts in accordance with TMS 602 Article 3.2 F.

3.3 INSTALLATION

A. 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.

B. Lay exposed masonry in running bond unless otherwise indicated in Project Drawings.

C. Lay concealed masonry in running bond unless otherwise indicated.

D. Place mortar in accordance with TMS 602 Article 3.3 B. (or, if a separate Section is included for mortar, append the foregoing with ", and with Section 04 05 13 Masonry Mortaring)

E. Place mortar and units in accordance with TMS 602 Article 3.3 B.

F. Install embedded items in accordance with TMS 602 Article 3.3 D.

G. Provide bracing as necessary in accordance with TMS 602 Article 3.3 E.

H. Comply with tolerances in TMS 602, Article 3.3 F.

3.4 INSTALLATION OF REINFORCING STEEL, WALL TIES, AND ANCHORS

A. Install reinforcing steel, wall ties, and anchors in accordance with TMS 602 Article 3.4. (or, if a separate Section is included for reinforcement, append the foregoing with ", and with Section 04 05 19 Masonry Anchorage and Reinforcing)

3.5 GROUTING

A. Comply with grout placement requirements in TMS 602 Article 3.5 (or, if a separate Section is included for grout, append the foregoing with ", and in accordance with Section 04 05 16 Masonry Grouting").

3.6 FIELD QUALITY CONTROL

The Statement of Special Inspections per CBC Section 1705.4 should specify tests, if any, required during construction.

A. Cooperate with owner's agent as needed to facilitate sampling and inspections in accordance with TMS 602 and the Statement of Special Inspections.

Include only if Quality Assurance Level 3 applies and prism test method is specified. Typical quantity is three.

1. Construct three prisms for each type of construction for every 5,000 sq. ft.

3.7 POINTING, AND CLEANING

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

B. During construction, minimize any mortar or grout 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, glazed, or pre-finished concrete masonry units, immediately remove any green mortar smears or soiling with a damp sponge.

Always utilize the mildest method possible to clean the masonry. Note that efflorescence is common to products containing cementitious and aggregate materials and is typical to new construction. The darker the unit color, of course, the more visible it is. Typical cleaning removes it.

Also note darker colors can be more sensitive to aggressive cleaning methods. It is important to test the proposed cleaning procedure prior to its implementation.

C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry surfaces of stains, efflorescence, mortar or grout droppings, and debris. Specify preferred cleaner below and edit as necessary.
   1. Use appropriate masonry cleaner as tested on the sample panel and as approved by the Design Professional, strictly following manufacturer's recommendations.
   2. Do not use acids.

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.
   1. Comply with Construction Waste Management plan.

An application of water repellent is a critical component of the masonry wall and may be included here for emphasis, coordinated with Section 07 19 00 Water Repellents. Otherwise, remove the following.

3.8 WATER REPELLENT APPLICATION

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

B. Apply water repellent in strict accordance with Section 07 19 00 and the water repellent manufacturer's instructions.

END OF SECTION