Note to User:
This section contains macros to aid the editing process. By default Microsoft Word disables macros for virus security reasons. When you open a file that has macros, the yellow message bar appears with a shield icon and the enable content button. To enable these macros, click the Enable Content button.

SECTION 09 24 00
PORTLAND CEMENT STUCCO
(To View Hidden Text, Type CTRL-H)

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Portland Cement, Pre-blended Scratch and Brown Coat Stucco.
B. Portland Cement, Pre-blended Fiber Base Coat Stucco.
C. Portland Cement, Pre-blended Colored Finish Coat Stucco.

1.2 RELATED SECTIONS
A. Section 03 30 00 - Cast-in-Place Concrete.
B. Section 04 20 00 - Unit Masonry.
C. Section 05 40 00 - Cold-Formed Metal Framing: Light gauge load-bearing metal framing.
D. Section 06 10 00 - Rough Carpentry: Wood framing.
E. Section 07 21 13 - Board Insulation.
F. Section 07 92 00 - Joint Sealants.
G. Section 09 22 16 - Non-Structural Metal Framing: Non-load-bearing metal framing systems.
H. Section 09 22 36 - Metal Lath.
I. Section 09 29 00 - Gypsum Board: Exterior gypsum sheathing.

1.3 REFERENCES
A. American National Standards Institute (ANSI) / American Hardboard Association (AHA):
   1. ANSI/AHA A 194 - Cellulosic Fiber Board.
B. ASTM International (ASTM):
   2. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
14. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
15. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete.
16. ASTM C 1002 - Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

C. Federal Specification (FS):

   1. ICC-ES AC11 Cementitious exterior wall coatings.

1.4 SYSTEM DESCRIPTION

A. Concrete or Pre-cast Concrete Substrate: 2-coat, Portland cement plaster applied over concrete consisting of the following:
   1. 2-coat plaster system.
      a. 3/8”- 1/2” Spec Mix Fiber Base Coat (FBC).
      b. Spec Mix Finish Coat.

B. Concrete Block, CMU Substrate: 2-coat, Portland cement plaster applied over concrete block consisting of the following:
   1. 2-coat plaster system.
      a. 3/8”- 1/2” Spec Mix Fiber Base Coat (FBC).
      b. Spec Mix Finish Coat.

C. Wood Sheathing Substrate: 2-coat, Portland cement plaster applied over [wood] or [steel] studs and wood sheathing consisting of the following:
   1. Secondary Weather Barrier over sheathing.
   2. Self-furring metal lath.
   3. 2-coat plaster system.
      a. 3/8”- 1/2” Spec Mix Fiber Base Coat (FBC).
      b. Spec Mix Finish Coat.
D. **Gypsum Board Substrate**: 2-coat, Portland cement plaster applied over [wood] or [steel] studs and gypsum board sheathing consisting of the following:
   1. Secondary Weather Barrier over sheathing.
   2. Self-furring metal lath.
   3. 2-coat plaster system.
      a. 3/8”- 1/2” Spec Mix Fiber Base Coat (FBC).
      b. Spec Mix Finish Coat.

E. **Expanded Polystyrene Insulation Board Substrate**: 2-coat, Portland cement plaster applied over [wood] or [steel] studs and polystyrene insulation board sheathing consisting of the following:
   1. Secondary Weather Barrier over sheathing.
   2. Tongue and Groove Polystyrene Insulation board.
   4. 2-coat plaster system.
      a. 3/8”- 1/2” Spec Mix Fiber Base Coat (FBC).
      b. Spec Mix Finish Coat.

F. **Wood Sheathing Substrate**: 3-coat, Portland cement plaster applied over [wood] or [steel] studs and wood sheathing consisting of the following:
   1. Secondary Weather Barrier over sheathing.
   2. Self-furring metal lath.
   3. 7/8 inch thick nominal, 3-coat plaster system.
      a. Scratch coat: 3/8”- 1/2” Spec Mix [Scratch & Brown Coat] or [Fiber Base Coat (FBC)].
      b. Brown coat: 3/8”- 1/2” Spec Mix [Scratch & Brown Coat] or [Fiber Base Coat (FBC)].
      c. Spec Mix Finish Coat.

G. **Gypsum Board Substrate**: 3-coat, Portland cement plaster applied over [wood] or [steel] studs and gypsum board sheathing consisting of the following:
   1. Building paper applied over sheathing.
   2. Self-furring metal lath.
   3. 7/8 inch thick nominal, 3-coat plaster system.
      a. Scratch coat: 3/8”- 1/2” Spec Mix [Scratch & Brown Coat] or [Fiber Base Coat (FBC)].
      b. Brown coat: 3/8”- 1/2” Spec Mix [Scratch & Brown Coat] or [Fiber Base Coat (FBC)].
      c. Spec Mix Finish Coat.

H. **Expanded Polystyrene Insulation Board Substrate**: 3-coat, Portland cement plaster applied over [wood] or [steel] studs and polystyrene insulation board sheathing consisting of the following:
   1. Secondary Weather Barrier over sheathing.
   2. Tongue and Groove Polystyrene Insulation board.
   4. 7/8 inch thick nominal, 3-coat plaster system.
      a. Scratch coat: 3/8”- 1/2” Spec Mix [Scratch & Brown Coat] or [Fiber Base Coat (FBC)].
      b. Brown coat: 3/8”- 1/2” Spec Mix [Scratch & Brown Coat] or [Fiber Base Coat (FBC)].
      c. Spec Mix Finish Coat.

1.5 **SUBMITTALS**

A. Submit under provisions of Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit manufacturer's product data.

C. Samples: Submit selection and verification samples of colored finish coat stucco.

D. Warranty: Submit stucco system warranty.
1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm specializing in manufacture of pre-blended stucco materials, with minimum 10 years’ experience.

B. Applicator: Firm specializing in the application of pre-blended stucco materials, with minimum 10 years’ experience.

C. Regulatory Requirements: Conform to applicable code requirements for finish system.

D. Mock-Up: Provide a mock-up of each type of stucco installation, using materials and systems specified in this Section; include at least one example of each type of accessory material.
   1. Construct mock-up in locations as indicated on drawings.
   2. Indicate texture, color and workmanship of finished work.
   3. Proceed with work only after the mock-up has been approved.
   4. Maintain the mock-up on site and remove at the completion of the project.

E. Designing and Detailing:
   1. Follow the stucco manufacturers written installation instructions, published details, and technical information in the design of the stucco systems.
   2. Sealants and backer rod are required at dissimilar materials and expansion joints within the stucco system to provide a watertight system.
   3. Minimum slope for all projections shall be 1:2 with a maximum length of 12” (30.5cm).

F. Substrate Systems:
   1. Deflection of the substrate systems shall not exceed L/360.
   2. Acceptable substrates for stucco systems are water-resistant core exterior grade gypsum sheathing (ASTM C1396), Dens-Glass Gold® sheathing (ASTM C1177), fiberboard ANSI/AHA A 194, exposure 1 (Grade C-D or better) plywood, expanded polystyrene insulation board ASTM C578, exposure 1 oriented strand board, cement board (ASTM C1325), poured concrete, and masonry units.
   3. Painted and otherwise coated surfaces of brick, unit masonry, stucco and concrete shall be inspected and prepared as approved by Spec Mix® Inc., technical department before application. Paint-on surface consolidates or primers shall not be used to bond stucco to painted surfaces.
   4. Consult Spec Mix® Technical Department for written approval of other substrates prior to beginning stucco work.
   5. Applicator to verify that the proposed substrate is acceptable prior to the stucco installation.

G. System Joints:
   1. Expansion joints in the system are required at building expansion joints, at prefabricated panel joints, where substrates change and where structural movement is anticipated. Control joints are required at a minimum of every 144 ft. (13 sq. m) of wall surface area and where specified by the design professional. The maximum uncontrolled length or width is 18 lineal feet (5.5 lineal meters) and a maximum uncontrolled length to height ratio of 2-1/2:1.

H. Pre-Installation Meeting: At least three weeks prior to commencing stucco work conduct a meeting at the project site to discuss contract requirements and job conditions; require the attendance of stucco installation contractor, and installers of related materials; notify Architect in advance of meeting.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products under provisions of section 01 66 00.

B. Deliver stucco materials in original unopened packages with manufacturer’s labels intact.

C. Protect stucco materials during transportation and installation to avoid physical damage.
D. Store stucco materials in cool, dry place protected from freezing.
E. Handle all products with appropriate precautions and care per MSDS.

1.8 PROJECT CONDITIONS
A. Comply with ASTM C 926 requirements.
B. Do not apply stucco materials in ambient temperatures below 4°C/40°F. Provide supplementary heat during installation and drying period when temperatures less than 4°C/40°F prevail.
C. Do not apply stucco materials to frozen surfaces.
D. Maintain ambient temperature at or above 4°C/40°F during and at least 24 hours after stucco installation and until dry.

1.9 SEQUENCING AND SCHEDULING
A. Coordinate and schedule installation of the stucco materials with related work of other sections.
B. Coordinate and schedule installation of trim, flashing, and joint sealers to prevent water infiltration behind the system.

1.10 WARRANTY
A. Provide a stucco system warranty based on the information provided by the applicator or the distributor following the completion of the system.
B. Comply with Spec Mix® project review requirements and notification procedures to assure qualification for warranty.

PART 2 – PRODUCTS

2.1 MANUFACTURERS
A. Acceptable Manufacturer: Spec Mix®, Inc., which is located at: 1230 Eagan Industrial Road, Suite 160, Eagan, MN 55121; Toll Free Tel: 888-SPEC-MIX (773-2649); Tel: 651-994-7120; Email: request info (info@specmix.com); Web: www.specmix.com
B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 – Substitution Procedures.
C. Obtain products from a single manufacturer.

2.2 METAL LATH
      a. One-Coat Application: Minimum 2.5 lb/sq. yd.
      b. Three-Coat Application: Minimum 3.4 lb/sq. yd.
B. Wire-Fabric Lath:
      a. One-Coat Application: Minimum No. 20 gauge, 1” galvanized steel fabric.
      b. Three-Coat Application: Minimum No. 17 gauge, 1” galvanized steel fabric.
2.3 PLASTER MATERIALS

A. **Scratch & Brown Pre-Blended Stucco**: SPEC MIX Scratch & Brown Pre-Blended Stucco is a dry pre-blended cement based stucco mix containing Portland cement, hydrated lime, sand, aggregates and performance admixtures formulated to be used in a three coat or a two coat application.

B. **Fiber Base Coat Pre-Blended Stucco**: SPEC MIX Fiber Base Coat (FBC), Pre-Blended Stucco is a dry pre-blended cement based stucco mix containing Portland cement, hydrated lime, polyester and fiberglass fibers, sand, aggregates and performance admixtures formulated to be used in a three coat or a two coat application.

C. **Colored Finish Coat Stucco**: SPEC MIX Colored Finish Coat Stucco is a dry pre-blended cement based stucco mix containing Portland cement, hydrated lime, sand, aggregates and performance admixtures formulated for optimum workability and reduced shrinkage.
   2. Pigments:
      a. Natural and synthetic, milled, blended iron oxides.
      b. Carbon added for darker colors shall not exceed 4 percent.
      c. Produce uniform and consistent color.
      d. Inert, stable to atmospheric conditions, sunfast, weather resistant, alkali resistant, water insoluble, lime proof and non-bleeding.
      e. Free of deleterious fillers and extenders.
   3. Color: Custom color, <Insert color>.

2.4 ACCESSORIES

A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

B. Metal Accessories:
   3. Corner Bead: Small nose corner bead with expanded flanges fabricated from zinc-coated (galvanized) steel.
   4. Casing Bead: Square-edged style with expanded flanges fabricated from zinc-coated (galvanized) steel.
   5. Control Joint: W-shaped accordion profile style with perforated flanges fabricated from zinc-coated (galvanized) steel.
   6. Expansion Joint: Two piece type slip-joint design fabricated from zinc-coated (galvanized) steel for application of backer rod sealant bead.

C. Secondary Weather Barrier: A secondary weather barrier must be installed over sheathing substrates and wrapped into rough openings prior to installation of the stucco materials. Suitable secondary weather barriers include minimum grade D building paper complying with federal specifications UUB 790a or asphalt saturated felt complying with ASTM D 226, or other code-recognized equivalent.
1. One layer of Grade D 60 minute paper with one layer of EPS or extruded polystyrene with tongue and groove edges.

2. Two layers Grade D 60 minute paper are required by International Building Code (IBC) for wood-based sheathings. Check the applicable code and code compliance report for appropriate type.

3. Two layers Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), unperforated.

4. Other approved secondary moisture barriers as approved by Spec Mix® and acceptable by current code jurisdictions.

D. Flexible Flashing: 9" wide, 20 mil thick, self-sealing, self-healing rubberized asphalt laminated to a polyethylene film. Use over weather barrier at rough openings.

2.5 MISCELLANEOUS MATERIALS

A. Water: Clean and potable without foreign matter.

B. Bonding Compound: Complying with ASTM C 932 and as recommended by Spec Mix® Inc.

C. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.

D. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.

E. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter.

F. Sealant: As specified in Section 07 92 00 - Joint Sealants.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including hollow-metal frames, cast-in anchors, structural framing, and lath for compliance with requirements and other conditions affecting performance of the Work.

B. Substrates:
   1. Verify that acceptable substrates have been installation. Refer to Quality Assurance Article above.
   2. Wall sheathings must be securely fastened per applicable building code requirements.
   3. Examine surfaces to receive system and verify that substrate and adjacent materials are dry, clean, and sound. Verify substrate surface is flat, free of fins or planar irregularities greater than 1/4" in 10'-0".

C. Flashings:
   1. Heads, jambs and sills of all openings must be flashed with a minimum 9" strip of flexible flashing prior to window/door, HVAC, etc. installation.
   2. Windows and openings to be flashed according to design and building code requirements.
   3. Individual windows that are ganged to make multiple units require continuous head flashing and/or the joints between the units must be fully sealed.

D. Utilities:
   1. The system must be properly terminated (back-wrapped, sealed, flashed) at all lighting fixtures, electrical outlets, hose bibs, vents, etc. Refer to Spec Mix® Inc., typical Details.
E. Decks:
   1. Wood decks must be properly flashed prior to system application. For proper application, refer to Spec Mix® Inc. typical Details. The system must be terminated a minimum of 1" above all decks, patios, sidewalks, etc.

F. Secondary Moisture Barrier:
   1. Verify that the secondary moisture barrier is installed over the substrate per applicable building code requirements, manufacturer’s specifications and Spec Mix® Inc. typical Details prior to stucco application.

G. Roof:
   1. Verify that all roof flashings have been installed in accordance with the guidelines set by the Asphalt Roofing Manufacturers Association (ARMA) and project design documents.

H. Weep Screed/Kick-out Flashing:
   1. Verify that Weep Screeds and Kick-out Flashings are installed where required prior to the stucco application. The flashing must be leak-proof and angled (min 100°) to allow for proper drainage and water diversion. Refer to Spec Mix® Inc. typical Details.

I. Do not proceed with stucco work until surfaces and conditions comply with requirements indicated in referenced installation standard and manufacturer's printed instructions.

3.2 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering work.

3.3 SECONDARY MOISTURE BARRIER INSTALLATION

A. Install secondary moisture barrier horizontally, overlapping in shingle pattern with 6" edge and end lap. Fasten to sheathing with corrosion-resistant staples. Secondary moisture barrier to be installed over all sheathing to receive plaster finish.

3.4 INSTALLATION, GENERAL

A. Fire-Resistance-Rated Assemblies: Install components according to requirements for design designations from listing organization and publication indicated on Drawings.

3.5 INSTALLING METAL LATH

A. Metal Lath: Install according to ASTM C 1063.
   1. Install metal lath with minimum 1-1/2" side and end laps.
   2. When end laps occur between supports, lace or wire ties the ends of the sheets with galvanized steel wire.
   3. Corrosion-resistant fasteners for lath attachment to penetrate a minimum 1" into wood framing.
   4. Secure lath is to metal framing using No.8-18, S-12, pan head, self-tapping screws spaced a maximum of 6 inches vertical on center to studs.

3.6 INSTALLING ACCESSORIES

A. General:
   1. Install trim in accordance with manufacturer's specifications.
   2. Install trim components in longest piece length possible to minimize joints.
   3. Allow 1/8" - 3/16" gap between the abutting trim pieces. Do not overlap trim.
4. Set intersection of trim in a minimum 4" bed of trim sealant approved by Spec Mix®, Inc.
5. Miter all corners at intersections of trim.
6. Install according to ASTM C 1063 and at locations indicated on Drawings or as follows.

B. Reinforcement for External Corners:
   1. Install corner bead at exterior corner locations.

C. Control Joints: Install control joints at locations indicated on Drawings and as follows:
   1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
      a. Vertical Surfaces: 144 sq. ft.
      b. Horizontal and other Non-vertical Surfaces: 100 sq. ft.
   2. At distances between control joints of not greater than 18 feet o.c.
   3. As required to delineate plasterwork onto areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
   4. Where control joints occur in surface of construction directly behind plaster.
   5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.7 PLASTER MIXING

A. General:
   1. Comply with ASTM C 926 for applications indicated.
   2. Mix pre-packaged stucco materials with clean water to comply with manufacturer's written instructions.
   3. No additives are permitted unless specified in product mixing instructions. Close containers when not in use. Prepare in a container that is clean and free of foreign substances. Do not use a container which has contained or been cleaned with a petroleum-based product. Use a mixer which is clean and free of foreign substances. Clean tools with soap and water immediately after use.

B. Bag Mixing Spec Mix® Stucco: 80 lb. Bag
   1. Place 1.2-1.5 gallons of potable water into the mixer for each 80 lb. bag.
   2. Slowly pour the contents of the bag(s) into the mixer.
   3. Mix for 4 to 5 minutes and then let the mixture slake for 3 to 4 minutes.
   4. Re-mix to break the initial set and add small amounts of water to adjust the consistency.
      a. Do not exceed a total volume of 2 gallons of water for each 80 lb. bag.
   5. Mixing time and procedures should be consistent with every batch for consistent material.
   6. Prepare only enough mix as can be applied in one hour.

C. Silo System Mixing Spec Mix® Stucco:
   1. Place 75% of the needed water into the mixer. A double mixer batch requires approximately four full 5 gallon pails.
   2. Pull open the silo handle to dispense the Spec Mix stucco product into mixer.
   3. Mix for 4 to 5 minutes and then let the mixture slake for 3 to 4 minutes.
   4. Re-mix to break the initial set and add small amounts of water to adjust the consistency.
   5. Mixing time and procedures should be consistent with every batch for consistent material.
   6. Prepare only enough mix as can be applied in one hour.

3.8 PLASTER APPLICATION

A. Apply plaster materials in accordance with manufacturer’s written installation instructions for the specific systems indicated.

B. General: Comply with ASTM C 926.
1. Bonding Compound: Apply on [unit masonry] [and] [concrete] plaster bases if required for adequate stucco bonding to substrate.
2. Apply cement plaster with sufficient force to develop full adhesion between plaster and the substrate.
3. Apply the base coat to completely embed lath or wire and to completely fill the thickness of the casing, screeds, or expansion/control joint.
4. It is acceptable to use the double back method of application, whereby the first pass of base coat covers the lath or wire and the second pass of base coat fills in the casing, screed, or control/expansion joints.
5. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
6. Once the base coat has been applied to the required thickness, a rod should be used to level the base coat with screeds, to provide a true, flat plane. Follow this by wood floating or darbying the surface. Fill all voids and dress surface for the finish coat.
   a. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
7. Allow base coat stucco to achieve its initial set (2-4 hours) prior to moisture curing. Moisture cure for at least 48 hours by lightly and evenly fogging the surface with water at least twice a day. Direct sunlight, hot temperatures, low humidity and wind may make additional fogging necessary.

3.9 PLASTER REPAIRS
A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.10 CLEANING
A. Clean stucco material from adjacent surfaces as recommended by manufacturer.
B. Remove surplus material and debris, including field sample, from site.

3.11 PROTECTION
A. Protect installed stucco surfaces from rain, snow and frost for 48–72 hours following application.

END OF SECTION