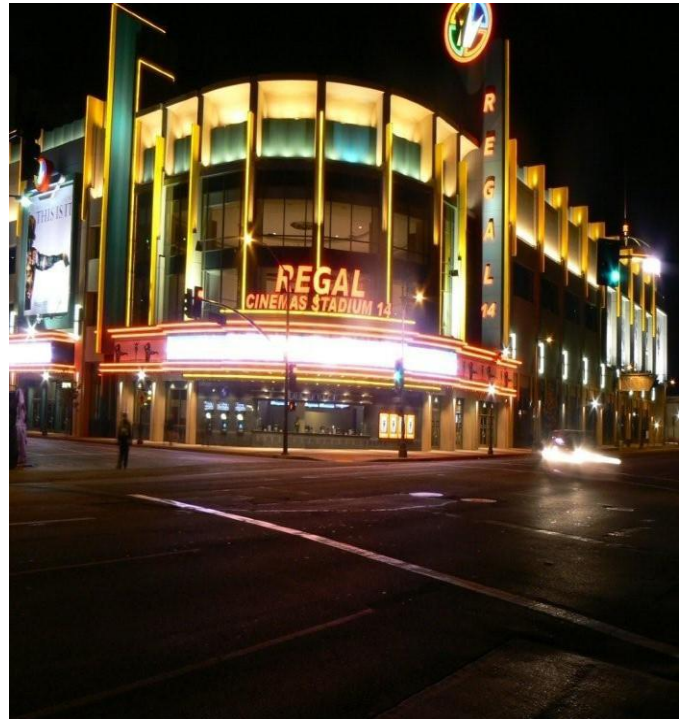


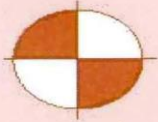
# Technical Services Information Bureau

## CHAPTER 4: THREE-COAT PLASTER (STUCCO) GUIDE SPECIFICATIONS



02/01/2012

CHAPTER PLASTER (STUCCO) GUIDE SPECIFICATIONS



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***“CI” PLASTER GUIDE SPEC CAN BE FOUND IN CHAPTER 7***

***OTHER SPECS MAY BE AVAILABLE: FOR QUESTIONS EMAIL [bryan@tsib.org](mailto:bryan@tsib.org)***

***ADDITIONAL GUIDE SPECIFICATIONS WILL BE POSTED TO THIS CHAPTER PERIODICALLY:***

***SEE MANUFACTURER’S WEBSITES <http://www.tsib.org/submittal-links.shtml>  
FOR PROPIETARY STUCCO & EIFS SPECS***

# CHAPTER 4 – “GUIDE SPECIFICATIONS”

## SECTION 09220

### *A Guide Specification for Portland Cement Plaster*

Recommended for LAUSD, OSHPD and DSA projects

#### PART I –GENERAL

##### 1.01 SUMMARY

- A. Provisions of Division 01 apply to this section
- B. Section Includes:
  - 1. Water-resistive barrier (WRB)
  - 2. Lath and portland cement plaster or (“Stucco”) as indicated on drawings.
  - 3. Portland cement scratch coat as a substrate for ceramic wall tile.
- C. Related Sections:
  - 1. Section 06100: Rough Carpentry
  - 2. Section 09100: Metal Support Assemblies & Suspended Ceilings
  - 3. Section 09250: Gypsum Sheathing
  - 4. Section 09300: Ceramic Tile

##### 1.02 DEFINITION

- A. Three coat (7/8 inch) Plaster Assembly over Framing:  
Silicone core/fiberglass face or wood based sheathing (per APA) exterior sheathing board, with one sheet of a self-adhered flashing (SAF) applied at all horizontal surfaces, under two sheets of black grade “D” building (kraft) paper as a weather-resistive barrier, galvanized plaster accessories, metal lath, a conventional plaster scratch and brown coat meeting ASTM Standard C 926, with an integrally colored finish.
- B. Two-Coat (5/8 inch) plaster over CMU substrate:  
A 3/8” to 5/8” ASTM C 926 Basecoat directly applied to properly-prepared concrete masonry units, with an integrally colored finish. A metal lath (no WRB) is required for applications over 5/8 inch thick.

##### 1.03 DESIGN REQUIREMENTS

- A. Provide portland cement plaster assemblies meeting International Building Code (IBC), American Society of Testing Materials (ASTM) and Technical Services Information Bureau (TSIB) requirements and/or recommendations for a nominal 7/8 inch cement plaster.
- C. Contractor shall install a complete portland cement plaster “stucco” assembly including all the equipment, materials and labor necessary as indicated on drawings.
- D. Contractor shall not assume design authority and shall request and/or inform Architect of any design deficiencies that may have a deleterious effect on the plaster assembly.

##### 1.04 SUBMITTALS

- A. Product Data: Submit manufacturer’s data sheets of all products to be installed, describing product size, finish and verify compliance with code or approval (i.e., ICC Evaluation Report.). Do not proceed until submittals are approved in writing by Architect.
- B. Samples: Submit actual samples of all trim accessories to be installed (control joints, expansion joints, corner reinforcement, reveals and screeds)
- C. Substitution Requests: Material or product substitutions will not be reviewed without a written cover statement from contractor explaining why and how the substitution will benefit the owner, including cost impact or savings, time impact or savings, warranty impact and service life. Reference letters are recommended.

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- D. Certificates: Provide certificates of any proprietary materials and/or systems to be installed for the product and that contractor is approved by manufacturer to install that product.
- E. Submitted sample: Contractor to submit a 24 inch x 24 inch sample of portland cement plaster with representative sample of workmanship, color and texture. Once approved by Architect, sample shall remain on project site for reference until project is complete.
- F. Site Mock-Up: Contractor shall install a mock-up on site that includes and demonstrates cement plaster to window transition with a flashing a penetration. In addition or may be same mock-up a control or expansion joint installation. The site mock may be part of the building, do not proceed until Architect has approved the flashing procedure. Do not alter from the established procedure unless approved by Architect.

## 1.05 QUALITY ASSURANCE

- A. Contractor shall be licensed, bonded and financially sound to complete project.
- B. Contractor shall meet the following requirements:
  - 1. Specialize in the scope of work, Lathers and Plasterers employed shall have completed a State-approved apprenticeship program for Lathing and Plastering. Apprentices shall be currently enrolled in such program.
  - 2. Contractor shall be able to meet scheduling requirements set at time of bid.
  - 3. Document experience in quality work of similar scope.
  - 4. Member in good standing of the Western Wall and Ceiling Contractors Association ([www.wvcca.org](http://www.wvcca.org)) or have a verified state approved apprenticeship program for lathers/plasterers.
- C. Comply with the following Standards:
  - 1. ASTM C 1063- Installation of Lathing and Furring to Receive Portland Cement Plaster
  - 2. ASTM C 926- Application of Portland Cement Plaster
  - 3. International (or local) Building Code (most current edition)
  - 4. Technical Service Information Bureau (TSIB) Technical Bulletins and “Plaster Textures & Acrylic Finishes” brochure.
  - 5. Manufacturer’s recommendations of products used.
  - 6. Plaster Assemblies Manual (most current edition)
- D. Inspection: TSIB may be requested to provide visual walk of completed lath prior to application of cement. WWCCA Contractor agrees to follow any and all recommendations directed by the TSIB. [WWW.TSIB.ORG](http://WWW.TSIB.ORG)
- E. OSHA and/or CAL/OSHA requirements where apply

## PART 2 – PRODUCTS

### 2.01 SHEATHING

- A. Comply with Division 9 Section “Gypsum Sheathing”.
- B. Wood-based sheathing: to comply with Engineered Wood Association (APA)

### 2.02 LATH AND RELATED ACCESORIES

- A. Water-resistant barrier (WRB) shall be minimum 60 minute water resistive Grade D and comply with Fed. Spec. UU-B-790a. Alternate WRB must be approved by the Architect.
- B. Self Adhered Flashing (SAF) must be compatible with the WRB, minimum 25 mils thick, self sealing and waterproof. Alternates must be approved by Architect.
- C. Cold-Rolled Channel (CRC): 1 ½ inch and ¾ inch with a minimum of 33,000 psi yield strength and a minimum of .0538 inch bare steel thickness, comply with ASTM A 653.  
Note: For suspended soffits and ceilings use 1½ inch CRC as main carrying channels and ¾ inch CRC as cross furring.

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- D. Lath: Type and style appropriate use. Paper-backed lath must be approved by Architect prior to use.
1. Expanded metal: Galvanized diamond mesh, 3.4 lbs/sy, self-furred, complying with ASTM C 847 (For metal framing, concrete and/or masonry substrates)
  2. Woven Wire: Galvanized, self-furred, 17 gage with openings not to exceed 1½ inch, complying with ASTM C 1032. Not for use on cold formed framing, concrete or masonry substrates. (For wood framed walls).
  3. Welded Wire: Galvanized, self-furred, 17 gage with openings not to exceed 1 ½ inch, complying with ASTM C 933. Not for use on ceilings (unless specifically designed), concrete or masonry substrates. Maybe used over metal framed walls provided the product is specifically designed for that purpose.
- E. Lath Accessories: Steel accessories to conform with ASTM C 653, aluminum from extruded alloy 6060 T5.
1. Foundation Weep Screeds: Minimum 26 gage galvanized steel with a 3 ½ inch attachment flange. Must be type that is designed to allow moisture to weep out. Industry generic name- #7 Weep Screed.
  2. Control Joints: Single-piece minimum 26 gage galvanized steel with a flange designed to engage plaster. Grounds to provide full 7/8 inch thickness of cement plaster. Industry generic name- XJ -15
  3. Expansion joint: Two-piece joint designed to allow for movement in multiple directions. Made from aluminum or galvanized steel (see drawings for profile and material designation) Industry generic name- #40 2-piece joint.
  4. Drip Screed: Minimum 26 gage galvanized steel with ground and holes to allow for drainage. Industry generic name #10 Drip.
  5. Casing Beads: Minimum 26 gage galvanized steel with 7/8 inch grounds. Expanded flange casing beads to be approved by Architect. Industry generic names: Milcor, J-mold or #66.
  6. Reveals: Size, shape and profile as designated on drawings. Actual sample must be submitted for approval. Aluminum reveals shall have 4 – way intersections shall be factory mitered. Contractor to use intersection and termination clips as supplied by manufacturer.
  7. Corner reinforcement: Welded wire corners made from galvanized steel. Square or “Bullnose” as per drawings. Plastic or (PVC) nose bead shall be used when an acrylic finish coat is used in lieu of a cement finish coat.
  8. “Butterflies”: 5 inch by 16 inch strips of metal lath or cornerite. Or strips of fiberglass reinforcing mesh embedded into base/skim coat. As an alternate, furring nails/screws around doors and windows. (Select one)
  9. Fasteners: All fasteners shall be corrosion resistant, delivered in sealed packages and clearly labeled
    - a. Wire: shall be galvanized annealed and 18 gage or 16 gage as appropriate for use, comply with Federal Spec. FSQQ-W-461g.AS.
    - b. Screws: Wafer head “lathers” Type S with length that penetrates steel not less than 3/8 inch or into wood framing 5/8 inch Comply with ASTM C 1002 and/or ASTM C 954
    - c. Nails: Galvanized 11 gage with a 3/8 inch diameter head and a length to penetrate wood framing (exclusive of sheathing) minimum ¾ inch. Comply with FS FF-N-105

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- d. Staples: Galvanized 16 gage with a minimum  $\frac{3}{4}$  inch crown and legs that penetrate wood framing (exclusive of sheathing) minimum  $\frac{3}{4}$  inch. Comply with FS-FF-N-105.
- e. Powder Actuated Fasteners: for concrete and masonry substrates only. Comes with a factory washer (disc) and shall have manufacturer's recommendation for the specific use intended. Must demonstrate a minimum 50 pound pull out value, not less than  $\frac{3}{4}$  inch long and is a head diameter of  $\frac{3}{8}$  inch wide.

### 2.03 PLASTER AND RELATED MATERIALS

- A. Portland Cements:
  - 1. “Common” Cement Type I/II or III , Comply with ASTM C 150
  - 2. Masonry Cement , Comply with ASTM C 91
  - 3. Plastic Cement, Comply with ASTM C1328
  - 4. Proprietary Blended Basecoats must demonstrate compliance with ASTM C 926 and provide a manufacturer's warranty
- B. Lime: Hydrated and Type S and complying with ASTM C 206
- C. Sand: Washed, free of deleterious or friable material and well graded, conforming to ASTM C 897 or demonstrate sand has a successful performance of at least five (5) years.
- D. Water: Clean and potable
- E. Additives to the basecoat:
  - 1. Fibers:  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long alkali resistant, polypropylene, nylon or fiberglass, complying with ASTM C 1116
  - 2. Pumping Additive: May be used when approved by Architect and only with a letter from manufacturer that the pump additive will have no deleterious effect on the plaster mix.
  - 3. Other Additives (air-entrainers, water reducers, accelerators and alternate plasticizers): not permissible unless approved by Architect.
- F. Basecoat Mix Proportions: Contractor shall select one of the following approved mix ratios and not alternate, switch or modify through the duration of the project unless approved by architect, follow TSIB recommendations: Scratch coat may be slightly richer in cement than brown coat: Proportions are listed in parts per volume. Sand is parts per “sum” of cementitious materials, lime is considered a cement. Fibers may be added to all mixes except proprietary basecoats. Pumping aids may be used if manufacturer's recommendations are closely followed. Quantities are volume and in parts:
  - Option #1 -**  
Field Mix: Conforming to ASTM C 926, Table 3
  - Option #2**  
Proprietary Basecoat: Follow all manufacturers' recommendations to ensure warranty
- G. Finish Coat: Refer to drawings for Cement or Acrylic Finish Coat. (Architect to select “cement” or an “acrylic” finish and note on elevations. Architect to Select one:
  - 1. Cement Finish: Pre-blended and bagged by a manufacturer member of the Stucco Manufacturers Association (SMA). Cement finish shall be pre-blended base material with pre-packaged color boxes (if required). Texture and color selection by Architect: (Select One and Note on Elevations)
    - a. Sand Finish (16-20)
    - b. Light machine “Dash”
    - c. Lace or Spanish trowel
    - d. Semi-smooth- (Santa Barbara or Mission) – shall include a polymer basecoat compatible with the cement finish coat.and fiberglass mesh over the brown coat.

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2. Acrylic Finish: Pre-blended and colored by a manufacturer that is a member of EIMA or the SMA. Texture and color selection by Architect: (Select one and note on elevations)
  - a. Sand Finish (fine, medium, coarse)
  - b. Putz or Swirl
  - c. Semi-smooth finish
  - d. Natural Stone Aggregate
  - e. Ceramic bead finish
  - f. Metallic finish
3. Use a primer coat for the acrylic finish to ensure color uniformity and 100% coverage on lighter colors and all putz finish or swirl finishes.
4. Fog coat manufactured by manufacturer for cement finish to ensure color uniformity (as needed)
5. Bonding agent (if required), non re-emulsifying type, designed specifically for exterior portland cement plaster.

## PART 3 – EXECUTION

### 3.01 EXAMINATION

- A. Verify that substrate and/or framing is complete and adequate to support lath and a portland cement plaster before starting work. Notify Architect, Owner or General Contractor of any unsatisfactory conditions. Proceed as directed.
- B. Clarify questions about details and inform Architect of conditions not to industry or TSIB standards. Proceed as directed.
- C. Do not cover wet materials, i.e. wood, gypsum sheathing.

### 3.02 WATER RESISTIVE BARRIER (WRB) INSTALLATION

- A. General: Install two (2) layers WRB over all sheathings.
  1. Individual layer, double layer, fifty percent method/s are acceptable.
  2. If synthetic “house wraps” are substituted for one of the layers of WRB, the asphaltic layer should be the top layer to act as a bond breaker for the scratch/base coat.
- B. Integrate with flashings to always create a “weatherboard” or “Shingle-Fashion”, i.e. upper layer always overlap lower layers. Layers may be applied at same time or staggered.
- C. Install WRB with a minimum two (2) inch horizontal laps and six (6) inch vertical laps. WRB is not required on ceilings or soffits.
- D. Repair holes, tears or rips as recommended by the TSIB.
- E. A Self Adhered Flashing (SAF) shall be used under the cement plaster in any locations where the plaster will be in less than a 60° plane or where water can pond. Apply SAF and WRB in a “Shingle Fashion”.
- F. A WRB (building paper or “housewrap”) is not to be applied over concrete and/or masonry substrates. Liquid applied or trowelable products (if required) are to be reviewed by Architect prior to installation.
- G. Cement plaster shall not be installed in a horizontal position and subject to water ponding. The surface and framing shall be sloped and have a layer of SAF to extend over the WRB to six (6) inches onto the vertical wall surface.

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## 3.03 LATH AND TRIM ACCESSORY INSTALLATION

- A. Install trim accessories, i.e. weep screeds, casing beads, reveals, drip molds, corner reinforcement and control/expansion joints plumb, level and straight. All intersections and terminations shall be neatly mitered and align with adjoining trims. The grounds shall be set to provide specified plaster thickness.
- B. Install longest length possible. It is recommended not to use pieces shorter than six (6) feet in length.(i.e. a 12 foot opening shall have two(2) six 6’ (foot) pieces.) Ends of lath should be staggered.
- C. Attach trim accessories to remain firm and solid during plastering. Attachment should not exceed 24 inches on center.
- D. Single-piece Control Joints may be placed over continuous lath and wire tied to lath. Two-piece Expansion Joints must have the lath cut, be attached to framing and lath lap the flanges. Expansion joints govern over control joints (i.e. control joints shall terminate into expansion joints).
  - 1. Place control joints as indicated on elevations. Typically this will be at corners of window and door openings. Panels should be as square as possible and should not exceed 144 square feet in size (unless otherwise noted on plans)
  - 2. WRB shall be continuous behind all control joints and vertical reveals.
  - 3. Horizontal reveals or two-piece expansion joints “may” have the WRB lap over the upper nail flange of the reveal. When this method is used; the WRB must extend up from below the horizontal reveal continuous behind and up past the reveal a minimum of six (6) inches. The upper layers of WRB lap over the nail flange.
- E. Walls subject to wind-driven rain shall have the trim accessory terminations, intersections and miters embedded in a daub of sealant.
- F. Expanded flange casing shall be allowed over concrete and/or masonry substrates.
- G. Apply metal lath horizontally across framing or furring supports and lap lath a minimum 1/2 inch at sides and minimum 1 inch on ends. Lap wire lath minimum one mesh on sides and ends. Stagger vertical laps at least 16 inches. Do not lap WRB over lath (no cold joints).
- H. Lath shall lap flanges of solid flanged trim accessories by a minimum of 50%..
- I. Attach lath to framing supports not more than seven (7) inches apart along framing supports only.
- J. Powder Actuated Fasteners shall be used on concrete/masonry substrates when lath is applied. Fasteners shall be driven home and avoid spalling of concrete. Pattern shall simulate that of framed walls. Fasteners shall have a minimum 50 lb “pull out” value.

## 3.04 SOFFITS AND CEILINGS

- A Refer to section 09100 –Suspended plaster ceilings

## 3.05 PLASTER INSTALLATION

- A General: Areas not to be plastered shall be protected and/or kept clean and free of cement. Basecoat shall be plumb and level, tolerance shall be ¼ inch in ten (10) feet. Texture and color shall match mock-ups.
- B. Concrete/masonry substrates: Contractor to determine if substrate is an acceptable for plaster bonding and if a bonding agent is required. Test patches are recommended. If substrate is questionable, notify Architect and proceed as directed.
- C. Ceramic Tile: Plasterer to provide a scratch coat (only) for the tile contractor. Wipe down all interior and exterior corners. Do not use additives that may impair bond of mortar bed for tile.
- D. Cement plaster to be applied with hand tools or machine at contractor’s option (Best Means & Methods).
- E. Do not mix more plaster that can be used in 30 minutes. Do not re-temper. Add only enough water allow proper application of cement plaster.

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- F. Verify lath is complete, substrates sound and solid prior to plastering.

## 3.06 SCRATCH COAT

- A. Apply from architectural break to architectural break with sufficient pressure to ensure keying into lath. No cold joints shall be allowed.
- B. Apply in sufficient thickness to substantially cover the lath.
- C. Immediately score (scarify) in a predominately horizontal direction.
- D. Wipe down all corners and leave no cement protrusions that will interfere with application of brown coat.
- E. (OPTION) Place “butterflies” of alkali-resistant fiberglass mesh in a diagonal direction, delicately onto fresh scratch coat at the apex of window and door penetrations.
- F. Let scratch coat cure 48 hours and moist cure with water. Contractor will determine moist-cure procedures based on climate conditions.
- G. Keep scratch coat hydrated. Follow ASTM and/or TSIB recommendations for curing.
- H. Do not apply brown coat until scratch coat is firm and hard.

## 3.07 BROWN COAT

- A. Pre-wet the scratch coat or concrete/masonry substrate (if required) to avoid excessive suction of moisture from brown coat to avoid accelerated evaporation.
- B. Apply from architectural break to architectural break. No cold joints will be allowed.
- C. Brown coat shall be applied and fill to the grounds. Surface to be immediately darbied and/or rodded to a level and plumb plane.
- D. When the initial moisture has left brown coat, “hard” float the brown coat to “densify”, consolidate and prepare for a finish coat. Sponge floats are not acceptable. A hard float shall be considered made from wood shingle, cork, plastic, compact felt or neoprene.

## 3.08 ALTERNATE METHOD

- A. Building codes and standards recognize the “alternate” method or “double-back” application method to apply the brown coat.. This is acceptable only after approval from Architect.
- B. The brown coat may be applied to the scratch coat as soon as the scratch coat has attained sufficient rigidity to allow brown coat application if the application does not fracture the scratch. On sheathed construction, the brown can be applied the same day at contractor’s option. Hard floating and curing still applies.

## 3.09 CURING

- A. It is important to keep cement basecoat hydrated and allow the cement to chemically cure and harden. Moist cure as needed, morning and evening as required to produce a hard basecoat. Refer to TSIB recommendation.
- B. Basecoat shall be allowed to cure a minimum of seven (7) days before applying a finish coat. If feasible allow the basecoat to cure fourteen (14) days prior to applying the finish coat.
- C. Plastered walls with excessive shrinkage cracks in the basecoat due to a failure to water cure shall be skim coated with a polymer-based cement coat prior to applying a finish coat.

## 3.10 FINISH COAT

- A. Apply finish coat to match mock-ups in color and texture.
- B. Acrylic finish coat (delete if not applicable): apply a primer coat for light colored finishes or provide full prime coverage for all “putz” or “swirl” textures, Natural Stone Aggregate and Ceramic-bead textures.
- C. Provide sufficient crew size to maintain a wet edge. Scaffold lines should be kept to a minimum.
- D. Maintain consistency and uniformity in application procedures and techniques.
- E. Leave adjacent surfaces clean and free of plaster (stucco).
- F. Leave protection of the plaster in place until finish coat is set.
- G. Repair scaffold tie-ins to maintain water-resistance of plaster assembly and blend with finish coat.

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## 3.11 QUALITY CONTROL

- A. Finish tolerance shall be  $\frac{1}{4}$ " in ten (10) feet. No “eye-catching” discrepancies shall be allowed. Refer to TSIB Technical bulletin on “Judging Exterior Plaster”.
- B. Avoid performing work that will result in patching.
- C. In the event of a dispute over quality or an installation, the architect shall call on the TSIB. Contractor agrees to abide by TSIB decision for repair, alteration or remedy.

END OF SECTION

This is a guide specification and the TSIB cannot accept liability expressed or implied for alterations, deletions or modifications to this guide specification.

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## SECTION 09100 A Guide Specification for Suspended Lath and Plaster Ceilings

### PART 1- GENERAL

- 1.01 Structural Design
  - A. Sizes based on static loads developed by standard maximum ceiling spacing and limited to a safety factor of 6.5.
  - B. Gypsum plaster is assumed to be 10lb. per square foot.
  - C. Portland cement plaster (7/8”) is assumed to be 13 lb. per square foot.
  - D. Runners and cross furring: Deflection limited to 1/360 of the shortest span under plaster load.
- 1.02 Reference Documents:
  - A. ASTM C-1063: Installation of Lathing and Furring for Portland Cement Plaster.
  - B. ASTM C-841: Installation of Interior Lathing and Furring.
  - C. ASTM C-926: Application of Portland Cement Plaster.
  - D. ASTM C-842: Application of Interior Gypsum Plaster.
  - E. NAIM Standard EMLA 920.

### PART 2- PRODUCTS & INSTALLATION

- 2.01 MATERIALS
  - A. Hanger wire shall be #8 Ga. (0.1620) diameter galvanized soft annealed wire.
  - B. Main runners (carriers) shall be 1 ½ inch x 16 Ga. Cold Rolled Channel weighing 475 lbs. per thousand lf. Galvanized for exterior locations.
  - C. Furring shall be ¾ inch x 16 Ga. Cold Rolled Channel weighing 300 lbs. thousand lf. Galvanized for exterior locations
  - D. Tie Wire shall be 16 Ga ( 0.0625) and/or 18 Ga. (0.0475) galvanized, soft annealed steel wire.
  - E. Metal Lath:
    - 1. 3.4 lb per square yard diamond mesh, expanded metal lath for furring spacing up to 16inches on center is allowed, better results with furring spaced not to exceed 13 ½ inches on center.
    - 2. 3.4 lb per square yard 1/8 inch flat ribbed expanded metal lath for furring spacing up to 19 inches. Better results when furring does not exceed 16 inches on center.
    - 3. 4.0 lb per square yard 3/8 inch hi-Rib expanded metal lath for furring spaced up to 24 inches. ( Limited use only)
  - F. Accessories:
    - 1. Corner Beads/Aid, Casing bead, control joints shall be made from 26 Ga. Galvanized steel, Zinc alloy or extruded aluminum or pure zinc.
    - 2. Accessories sized and installed to provide required plaster thickness.
- 2.02 Installation;
  - A. *Wire hangers* shall be installed to or pre-installed in structure capable of supporting the ceiling weight, plus the safety margin, without deflection. Avoid splicing of hangers. The hanger attachment shall develop full hanger strength before proceeding. Hangers shall be straight and within a ratio of 1:6 of plumb. Hanger wires shall not contact mechanical or electrical items in the plenum area. Hanger wires shall be installed at a 4' x 4' pattern for gypsum plaster and a 3' by 4 ' pattern for Portland cement plaster up to one inch thick. Hangers shall be located within 6 inches of the ends of main runners.
  - B. *Main runners* shall be spaced at 4' (48”) o.c.. Main runners shall be located within 6 inches of parallel walls. Attach hanger wires to main runners with a saddle tie that prevents settling, uplift, or twisting of the main runners. Splice main runners with a 12 inch nested lap and a double wrap tie at each end. Main runners shall be installed to a tolerance of+ or – 1/8 inch of a flat plane.

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- C. *Cross furring* shall be saddled tied to the main runners with a #16 Ga wire or two strands of #18 Ga wire. Splice furring with an 8 inch nested lap and wire tie at each end. The recommended furring spacing is 12 to 13 ½ inches to receive a 3.4 diamond mesh lath. Rib lath and the wide spacing for cross furring is recommend only for small or limited areas.
- D. *Install lath* with long dimensions perpendicular to framing members. Lap edges a minimum ½ inch. Lap ends on furring members and stagger end joints. Metal lath shall be attached to furring members with a single strand of 18 Ga tie wire spaced approximately 7 inches on center. When rib lath is used, wire ties shall engage the rib and ribs shall be nested. Edge laps shall be wire tied, between furring members at 9 inches on center maximum.
- E. *Accessories*: Attach casing beads where plaster ceiling abuts dissimilar materials, or at the perimeter of unrestrained ceilings. Control joint spacing:
  - 1. *Unrestrained Gypsum Plaster*: Control joints should be installed not exceed 50 lf, or allow panels larger than 2500 square feet.
  - 2. *Restrained Gypsum Plaster*: Control joints should be installed not to exceed 30 lf, or allow panels larger than 900 square feet.
  - 3. *Unrestrained Portland Cement Plaster*: Control joints should be installed not to exceed 30 lf or allow panels larger than 200 square feet.
  - 4. *Restrained Portland Cement Plaster*: Control joints should be installed not to exceed 18 lf or allow panels larger than 100 square feet.
  - 5. Runners and furring should be spliced at control joints. It is recommended to have lath discontinuous at control joints in ceilings. Accessory items shall be installed straight and to a tolerance of + or – 1/8 inch of a flat plane.

### 2.03 General Information:

- A. It is generally preferred to install an unrestrained suspended plaster ceiling. Larger suspended plaster ceilings, more than 50 feet in one dimension or more than 2500 square feet should not contact abutting walls or columns (unrestrained). Framing members should stop within 1 inch of the abutting wall surface and casing beads installed in contact (but not connected) with or within ¼ inch of abutting surfaces. Flexible sealant or a foam tape may be installed between the casing bead and abutting surface. Additional framing members and hanger wires shall be installed to frame around ceiling penetrations, such as light fixtures, access panels and duct work.
- B. Control joints are recommended to extended from the 90 apex of penetrating items, such light fixtures, access panels and vent intake or exhausts.
- C. Sheathings are not recommended to be installed on this type of ceiling. Lath shall be directly wired to cross furring members.
- D. Compression posts or rigid vertical struts are not recommended for lath and plaster ceilings.
- E. *Plastering*:
  - 1. Portland Cement plaster shall be used for exterior locations or ceilings exposed to constant high humidity.
  - 2. Gypsum plaster shall be used on protected areas and all interior ceilings not exposed to constant high humidity. Hi-strength gypsum plaster shall be used on interior security ceilings.
  - 3. Plaster may be installed to a thickness of 5/8 inch to 1 inch in a three coat application. For basecoat mix recommendations, application and curing refer to the appropriate ASTM standard and/or Chapters 2 and 3 of the Plaster Assemblies Manual. For finish/texture selection refer to Chapter 5

END OF SECTION

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# CHAPTER 4 – “GUIDE SPECIFICATIONS”

## SECTION 09220

### *A Guide Specification for* **Portland Cement Plaster With Acrylic “Smooth” Finish**

#### PART I –GENERAL

##### 1.03 SUMMARY

- A. Provisions of Division 01 apply to this section
- B. Section Includes:
  - 1. Water-resistive barrier (WRB)
  - 2. Lath and portland cement plaster or (“Stucco”) as indicated on drawings.
  - 3. Portland cement scratch coat as a substrate for ceramic wall tile.
- D. Related Sections:
  - 1. Section 06100 : Rough Carpentry
  - 2. Section 09100: Metal Support Assemblies & Suspended Ceilings
  - 3. Section 09250: Gypsum Sheathing
  - 4. Section 09300: Ceramic Tile

##### 1.04 DEFINITION

- A. Three coat (7/8 inch) Plaster assembly with acrylic basecoat and mesh over framing: Silicone core/fiberglass face or wood-based sheathing (per APA) exterior sheathing board, with one sheet of a self-adhered flashing (SAF) applied at all horizontal surfaces, under two sheets of black grade “D” building (kraft) paper as a water-resistive barrier, galvanized plaster accessories, metal lath, a conventional plaster scratch and brown coat meeting ASTM Standard C 926. An acrylic base coat and mesh with an acrylic “smooth” finish.
- B. Two-Coat (5/8 inch) plaster over CMU substrate:  
A 3/8” to 5/8” ASTM C 926 basecoat directly applied to properly-prepared concrete masonry units, with an integrally colored finish. A metal lath (no WRB) is required for applications over 5/8 inch thick.

##### 1.03 DESIGN REQUIREMENTS

- A. Provide portland cement plaster assemblies meeting International Building Code (IBC), American Society of Testing Materials (ASTM) and Technical Services Information Bureau (TSIB) requirements and/or recommendations for a nominal 7/8 inch cement plaster.
- C. Contractor shall install a complete portland cement plaster “stucco” assembly including all the equipment, materials and labor necessary as indicated on drawings.
- D. Contractor shall not assume design authority and shall request and/or inform Architect of any design deficiencies that may have a deleterious effect on the plaster assembly.

##### 1.04 SUBMITTALS

- A. Product Data: Submit manufacturer’s data sheets of all products to be installed, describing product size, finish and verify compliance with code or approval (i.e., ICC Evaluation Report.). Do not proceed until submittals are approved in writing by Architect.
- B. Samples: Submit actual samples of all trim accessories to be installed (control joints, expansion joints, corner reinforcement, reveals and screeds)
- C. Substitution Requests: Material or product substitutions will not be reviewed without a written cover statement from contractor explaining why and how the substitution will benefit the owner, including cost impact or savings, time impact or savings, warranty impact and service life. Reference letters are recommended.

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- D. Certificates: Provide certificates of any proprietary materials and/or systems to be installed for the product and that contractor is approved by manufacturer to install that product.
- E. Submitted Mock-Up: Contractor to submit a 24 inch x 24 inch sample of portland cement plaster with representative sample of workmanship, color and texture. Once approved by Architect, sample shall remain on project site for reference until project is complete.
- F. Site Mock-Up: Contractor shall install a mock-up on site that includes and demonstrates cement plaster to window transition with a flashing a penetration. In addition or may be same mock-up a control or expansion joint installation. The site mock may be part of the building, do not proceed until Architect has approved the flashing procedure. Do not alter from the established procedure unless approved by Architect.

## 1.05 QUALITY ASSURANCE

- A. Contractor shall be licensed, bonded and financially sound to complete project.
- B. Contractor shall meet the following requirements:
  - 1. Specialize in the scope of work, Lathers and Plasterers employed shall have completed a State approved apprenticeship program for Lathing and Plastering. Apprentices shall be currently enrolled in such program.
  - 2. Contractor shall be able to meet scheduling requirements set at time of bid.
  - 3. Document experience in quality work of similar scope.
  - 4. Member in good standing of the Western Wall and Ceiling Contractors Association ([www.wvcca.org](http://www.wvcca.org)) or have a verified state approved apprenticeship program for lathers/plasterers.
- C. Comply with the following Standards:
  - 1. ASTM C 1063- Installation of Lathing and Furring to Receive Portland Cement Plaster
  - 2. ASTM C 926- Application of Portland Cement Plaster
  - 3. International (or local) Building Code (most current edition)
  - 4. Technical Service Information Bureau (TSIB) Technical Bulletins and “Plaster Textures & Acrylic Finishes” brochure.
  - 5. Manufacturer’s recommendations of products used.
  - 6. Plaster Assemblies Manual (most current edition)
- D. Inspection: TSIB may be requested to provide visual walk of completed lath prior to application of cement. WWCCA Contractor agrees to follow any and all recommendations directed by the TSIB. [WWW.TSIB.ORG](http://WWW.TSIB.ORG)
- E. OSHA and/or CAL/OSHA requirements where apply

## PART 2 – PRODUCTS

### 2.01 SHEATHING

- A. Comply with Division 9 Section “Gypsum Sheathing”.
- B. Wood-based sheathing: to comply with Engineered Wood Association (APA)

### 2.02 LATH AND RELATED ACCESORIES

- A. Water-resistive barrier (WRB) shall be minimum 60 minute Grade D and comply with Fed. Spec. UU-B-790a. Alternate WRB must be approved by the Architect.
- B. Self Adhered Flashing (SAF) must be compatible with the WRB, minimum 25 mils thick, self sealing and waterproof. Alternates must be approved by Architect.
- C. Cold-Rolled Channel (CRC): 1 ½ inch and ¾ inch with a minimum of 33,000 psi yield strength and a minimum of .0538 inch bare steel thickness, comply with ASTM A 526.  
Note: For suspended soffits and ceilings use 1½ inch CRC as main carrying channels and ¾ inch CRC as cross furring.

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- D. Lath: Type and style appropriate use. Paper-backed lath must be approved by Architect prior to use.
1. Expanded metal: Galvanized diamond mesh, 3.4 lbs/sy, self-furred, complying with ASTM C 847 (For metal framing, concrete and/or masonry substrates)
  2. Woven Wire: Galvanized, self-furred, 17 gage with openings not to exceed 1½ inch, complying with ASTM C 1032. Not for use on cold formed framing, concrete or masonry substrates. (For wood framed walls).
  3. Welded Wire: Galvanized, self-furred, 17 gage with openings not to exceed 1 ½ inch, complying with ASTM C 933. Not for use on ceilings (unless specifically designed), concrete or masonry substrates. Maybe used over metal framed walls provided the product is specifically designed for that purpose.
- E. Lath Accessories: Steel accessories to conform with ASTM C841, aluminum from extruded alloy 6060 T5.
1. Foundation Weep Screeds: Minimum 26 gage galvanized steel with a 3 ½ inch attachment flange. Must be type designed to allow moisture to weep out. Industry generic name- #7 Weep Screed.
  2. Control Joints: single-piece minimum 26 gage galvanized steel with a flange designed to engage plaster. Grounds to provide full 7/8 inch thickness of cement plaster. Industry generic name- XJ -15
  3. Expansion joint: Two-piece joint designed to allow for movement in multiple directions. Made from aluminum or galvanized steel (see drawings for profile and material designation) Industry generic name- #40 2-piece joint
  4. Drip Screed: Minimum 26 gage galvanized steel with ground and holes to allow for drainage. Industry generic name #10 Drip.
  5. Casing Beads: Minimum 26 gage galvanized steel with 7/8 inch grounds. Expanded flange casing beads to be approved by Architect. Industry generic names, Milcor, J-mold or #66
  6. Reveals: Size, shape and profile as designated on drawings. Actual sample must be submitted for approval. Aluminum reveals shall have 4 – way intersections shall be factory mitered. Contractor to use intersection and termination clips as supplied by manufacturer
  7. Corner reinforcement: Welded wire corners made from galvanized steel. Square or “Bullnose” as per drawings. Plastic or (PVC) nose bead shall be used when an acrylic finish coat is used in lieu of a cement finish coat
  8. “Butterflies”: 5 inch by 16 inch strips of metal lath or cornerite. Or strips of fiberglass reinforcing mesh embedded into base/skim coat. As an alternate, furring nails/screws around doors and windows. Select one
  9. Fasteners: All fasteners shall be corrosion resistant, delivered in sealed packages and clearly labeled
    - a. Wire: shall be galvanized annealed and 18 gage or 16 gage as appropriate for use, comply with Federal Spec. FSQQ-W-461g.AS.
    - b. Screws: Wafer head “lathers” Type S with length that penetrates steel not less than 3/8 inch or into wood framing 5/8 inch Comply with ASTM C1002
    - c. And/or ASTM C 954
    - d. Nails: Galvanized 11 gage with a 3/8 inch diameter head and a length to penetrate wood framing (exclusive of sheathing) minimum ¾ inch. Comply with FS FF-N-105

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- e. Staples: Galvanized 16 gage with a minimum  $\frac{3}{4}$  inch crown and legs that penetrate wood framing (exclusive of sheathing) minimum  $\frac{3}{4}$  inch. Comply with FS-FF-N-105.
- f. Powder Actuated Fasteners: for concrete and masonry substrates only. Comes with a factory washer (disc) and shall have manufacturer's recommendation for the specific use intended. Must demonstrate a minimum 50 pound pull out value, not less than  $\frac{3}{4}$  inch long and is a head diameter of  $\frac{3}{8}$  inch wide.

## 2.03 PLASTER AND RELATED MATERIALS

- A. Portland Cements:
  - 1. “Common” Cement Type I/II or III, Comply with ASTM C 150
  - 2. Masonry Cement , Comply with ASTM C 91
  - 3. Plastic Cement, Comply with ASTM C1328
  - 4. Proprietary Blended Basecoats must demonstrate compliance with ASTM C 926 and provide a manufacturer's warranty
- B. Lime: Hydrated and Type S and complying with ASTM C 206
- C. Sand: Washed, free of deleterious or friable material and well graded, conforming to ASTM C 897 or demonstrate sand has a successful performance of at least five (5) years
- D. Water: Clean and potable
- E. Additives to the basecoat:
  - 1. Fibers:  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long alkali resistant, polypropylene, nylon or fiberglass, complying with ASTM C 1116
  - 2. Pumping Additive: May be used when approved by Architect and only letter from manufacturer that the pump additive will have no deleterious effect on the plaster mix.
  - 3. Other Additives (air-entrainers, water reducers, accelerators and alternate plasticizers): Are not permissible unless approved by Architect
- F. Basecoat Mix Proportions: Contractor shall select one of the following approved mix ratios and not alternate, switch or modify through the duration of the project unless approved by architect, follow TSIB recommendations: Scratch coat may be slightly richer in cement than brown coat: Proportions are listed in parts per volume. Sand is parts per “sum” of cementitious materials, lime is considered a cement. Fibers may be added to all mixes except proprietary basecoats. Pumping aids may be used if manufacturer's recommendations are closely followed. Quantities are volume and in parts:  
**Option #1** – “Field Mix”: per ASTM C 926, Table 3.  
**Option #2** - Proprietary Basecoat: Follow all manufacturers' recommendations to ensure warranty.
- G. Lamina (acrylic “skim coat with glass mat mesh embedment)
  - 1. Cement-based acrylic base coat compatible with and supplied by the finish manufacturer.
  - 2. Minimum 4 oz yd<sup>2</sup> fiberglass mesh supplied by finish manufacturer.
- H. Finish Coat: 100% acrylic “smooth” finish and note on elevations. Architect to Select one:
  - 1 Produced by manufacturer that is a member of EIMA or The Stucco Manufacturers Association.

## PART 3 – EXECUTION

### 3.01 EXAMINATION

- A. Verify that substrate and/or framing is complete and adequate to support lath and a portland cement plaster before starting work. Notify Architect, owner or General contractor of any unsatisfactory conditions. Proceed as directed.

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- B. Clarify questions about details and inform Architect of conditions not to industry or TSIB standards. Proceed as directed.
- C. Do not cover wet materials, i.e. wood, gypsum sheathing.

### 3.02 WATER-RESISTIVE BARRIER (WRB) INSTALLATION

- A. General: Install two (2) layers WRB over all sheathings.
  - 1. Individual layer, double layer, fifty percent method/s are acceptable.
  - 2. If synthetic “house wraps” are substituted for one of the layers of WRB, the asphaltic layer should be the top layer to act as a bond breaker for the scratch/base coat.
- B. Integrate with flashings to always create a “weatherboard” or “Shingle-Fashion”, i.e. upper layer always overlap lower layers. Layers may be applied at same time or staggered.
- C. Install WRB with a minimum two (2) inch horizontal laps and six (6) inch vertical laps. WRB is not required on ceilings or soffits.
- D. Repair holes, tears or rips as recommended by the TSIB.
- E. A Self Adhered Flashing (SAF) shall be used under the cement plaster in any locations where the plaster will be in less than a 60° plane or where water can pond. Apply SAF and WRB in a “Shingle Fashion”.
- F. A WRB (building paper or “housewrap”) is not to be applied over concrete and/or masonry substrates. Liquid applied or trowelable products (if required) are to be reviewed by Architect prior to installation.
- G. Cement plaster shall not be installed in a horizontal position and subject to water ponding. The surface and framing shall be sloped and have a layer of SAF to extend over the WRB to six (6) inches onto the vertical wall surface.

### 3.03 LATH AND TRIM ACCESSORY INSTALLATION

- A. Install trim accessories, i.e. weep screeds, casing beads, reveals, drip molds, corner reinforcement and control/expansion joints plumb, level and straight. All intersections and terminations shall be neatly mitered and align with adjoining trims. The grounds shall be set to provide specified plaster thickness.
- B. Install longest length possible. It is recommended not to use pieces shorter than six (6) feet in length.(i.e. a 12 foot opening shall have two(2) six 6’ (foot) pieces.) Ends of lath should be staggered.
- C. Attach trim accessories to remain firm and solid during plastering. Attachment should not exceed 24 inches on center.
- D. Single-piece Control Joints may be placed over continuous lath and wire tied to lath. Two-piece Expansion Joints must have the lath cut, be attached to framing and lath lap the flanges. Expansion joints govern over control joints (i.e. control joints shall terminate into expansion joints).
  - 1. Place control joints as indicated on elevations. Typically this will be at corners of window and door openings. Panels should be as square as possible and should not exceed 144 square feet in size (unless otherwise noted on plans)
  - 2. WRB shall be continuous behind all control joints and vertical reveals.
  - 3. Horizontal reveals or two-piece expansion joints “may” have the WRB lap over the upper nail flange of the reveal. When this method is used; the WRB must extend up from below the horizontal reveal continuous behind and up past the reveal a minimum of six (6) inches. The upper layers of WRB lap over the nail flange.
- E. Walls subject to wind-driven rain shall have the trim accessory terminations, intersections and miters embedded in a daub of sealant.
- F. Expanded flange casing shall be allowed over concrete and/or masonry substrates.

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- G. Apply metal lath horizontally across framing or furring supports and lap lath a minimum 1/2 inch at sides and minimum 1 inch on ends. Lap wire lath a minimum one mesh on sides and ends. Stagger vertical laps at least 16 inches. Do not lap WRB over lath (no cold joints).
- H. Lath shall lap flanges of solid flanged trim accessories by a minimum of 50%.
- I. Attach lath to framing supports not less than seven (7) inches on center along framing supports only.
- J. Powder Actuated Fasteners shall be used on concrete/masonry substrates when lath is applied. Fasteners shall be driven home and avoid spalling of concrete. Pattern shall simulate that of framed walls. Fasteners shall have a minimum 50 lb “pull out” value.

## 3.04 SOFFITS AND CEILINGS

- A Refer to section 09100 –Suspended plaster ceilings

## 3.05 PLASTER INSTALLATION

- A General: Areas not to be plastered shall be protected and/or kept clean and free of cement. Basecoat shall be plumb and level, tolerance shall be ¼ inch in ten (10) feet. Texture and color shall match mock-ups.
- B. Concrete/masonry substrates: Contractor to determine if substrate is an acceptable for plaster bonding and if a bonding agent is required. Test patches are recommended. If substrate is questionable, notify Architect and proceed as directed.
- C. Ceramic Tile: Plasterer to provide a scratch coat (only) for the tile contractor. Wipe down all interior and exterior corners. Do not use additives that may impair bond of mortar bed for tile.
- D. Cement plaster to be applied with hand tools or machine at contractor’s option (Best Means & Methods).
- E. Do not mix more plaster that can be used in 30 minutes. Do not re-temper. Add only enough water allow proper application of cement plaster.
- F. Verify lath is complete, substrates sound and solid prior to plastering.

## 3.06 SCRATCH COAT

- A. Apply from architectural break to architectural break with sufficient pressure to ensure keying into lath. No cold joints shall be allowed.
- B. Apply in sufficient thickness to substantially cover the lath.
- C. Immediately score (scarify) in a predominately horizontal direction.
- D. Wipe down all corners and leave no cement protrusions that will interfere with application of brown coat.
- E. (OPTION) Place “butterflies” of alkali-resistant fiberglass mesh in a diagonal direction, delicately onto fresh scratch coat at the apex of window and door penetrations.
- F. Let scratch coat cure 48 hours and moist cure with water. Contractor will determine moist-cure procedures based on climate conditions.
- G. Keep scratch coat hydrated. Follow ASTM and/or TSIB recommendations for curing.
- H. Do not apply brown coat until scratch coat is firm and hard.

## 3.07 BROWN COAT

- A. Pre-wet the scratch coat or concrete/masonry substrate (if required) to avoid excessive suction of moisture from brown coat to avoid accelerated evaporation.
- B. Apply from architectural break to architectural break. No cold joints will be allowed.
- C. Brown coat shall be applied and fill to the grounds. Surface to be immediately darbied and/or rodde to a level and plumb plane.
- D. When the initial moisture has left brown coat, “hard” float the brown coat to “densify”, consolidate and prepare for a finish coat. Sponge floats are not acceptable. A hard float shall be considered made from wood shingle, cork, plastic, compact felt or neoprene.

## 3.08 ALTERNATE METHOD

- A. Building codes and standards recognize the “alternate” method or “double-back” application method to apply the brown coat.. This is acceptable only after approval from Architect.

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- B. The brown coat may be applied to the scratch coat as soon as the scratch coat has attained sufficient rigidity to allow brown coat application if the application does not fracture the scratch. On sheathed construction, the brown can be applied the same day at contractor’s option. Hard floating and curing still applies.

## 3.09 CURING

- A. It is important to keep cement basecoat hydrated and allow the cement to chemically cure and harden. Moist cure as needed, morning and evening as required to produce a hard basecoat. Refer to TSIB recommendation.
- B. Basecoat shall be allowed to cure a minimum of seven (7) days before applying a finish coat. If feasible allow the basecoat to cure fourteen (14) days prior to applying the finish coat.
- C. Plastered walls with excessive shrinkage cracks in the basecoat due to a failure to water cure shall be skim coated with a polymer-based cement coat prior to applying a finish coat.

## 3.10 LAMINA

- A. Apply base coat and fully embed mesh in base coat; include diagonal mesh patches at corners base coat and mesh where required for specified impact resistance classification.
- B. Once mesh is completely embedded and base coat is dry to the touch, come back with a second (skimcoat) of base coat and trowel to a smooth and uniform consistency.

## 3.11 ACRYLIC “SMOOTH” FINISH COAT

- A. Apply finish coat to match mock-ups in color and texture.
- B. Apply first coat of finish approximately 1/16th of an inch over entire panel using a steel trowel, allow for the first coat to begin its set, then double back with a second coat.
- C. Apply the second coat and allow for the material to achieve a slight set, then trowel smooth without leaving directional lines to a uniform surface.
- D. Provide sufficient crew size to maintain a wet edge. Cold joints are not to be tolerated. Scaffold lines should be kept to a minimum.
- E. Maintain consistency and uniformity in application procedures and techniques.
- F. Leave adjacent surfaces clean and free of plaster (stucco).
- G. Leave protection of the plaster in place until finish coat is set.
- H. Repair scaffold tie-ins to maintain water-resistance of plaster assembly and blend with finish coat.

## 3.12 QUALITY CONTROL

- A. Finish tolerance shall be ¼” in ten (10) feet. No “eye-catching” discrepancies shall be allowed. Refer to TSIB Technical bulletin on “Judging Exterior Plaster”.
- B. Avoid performing work that will result in patching.
- C. In the event of a dispute over quality or an installation, the architect shall call on the TSIB. Contractor agrees to abide by TSIB decision for repair, alteration or remedy.

END OF SECTION

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