

SECTION 09220 - PORTLAND CEMENT PLASTER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Metal framing and furring.
2. Metal lath and accessories.
3. Plastic accessories.
4. Portland cement plaster.
5. Stucco finishes.
6. Acrylic-based finishes.

- B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 5 Section "Cold-Formed Metal Framing" for load-bearing steel studs and joists.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each product specified.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where fire-resistance-rated portland cement plaster assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

- B. **Mockups:** Prior to installing plaster work, construct panels for each type of finish and application required to verify selections made under Sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final unit of Work.

1. Locate mockups on-site in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Demonstrate the proposed range of aesthetic effects and workmanship.
3. Obtain Architect's approval of mockups before start of plaster Work.
4. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed portland cement plaster Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver cementitious materials to Project site in original packages, containers, or bundles, labeled with manufacturer's name, product brand name, and lot number.
- B. Store materials inside, under cover, and dry, protected from weather, direct sunlight, surface contamination, aging, corrosion, and damage from construction traffic and other causes.

1.6 PROJECT CONDITIONS

- A. **Environmental Requirements, General:** Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during, and after plaster application.
- B. **Cold-Weather Requirements:** Provide heat and protection, temporary or permanent, as required to protect each coat of plaster from freezing for at least 24 hours after application. Distribute heat uniformly to prevent concentration of heat on plaster near heat sources; provide deflection or protective screens.
- C. **Warm-Weather Requirements:** Protect plaster against uneven and excessive evaporation and from strong flows of dry air, both natural and artificial. Apply and cure plaster as required by climatic and job conditions to prevent dry out during cure period. Provide suitable coverings, moist curing, barriers to deflect sunlight and wind, or combinations of these, as required.
- D. Protect contiguous work from soiling and moisture deterioration caused by plastering. Provide temporary covering and other provisions necessary to minimize harmful spattering of plaster on other work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. National Gypsum Co.
- b. Unimast, Inc.
- c. Western Metal Lath Co.

2. Expanded-Metal Lath:

- a. National Gypsum Co.
- b. Unimast, Inc.
- c. United States Gypsum Co.
- d. Western Metal Lath Co.

3. Metal Accessories:

- a. Fry Reglet Corporation.
- b. National Gypsum Co.
- c. Unimast, Inc.
- d. United States Gypsum Co.
- e. Western Metal Lath Co.

4. Stucco:

- a. Florida Stucco Corp.
- b. Highland Stucco.
- c. IPA Systems, Inc.
- d. United States Gypsum Co.

2.2 STEEL STUDS AND RUNNERS

A. General: Provide steel studs and runners complying with the following requirements:

1. Protective Coating: ASTM A 653, G40 (ASTM A 653M, Z90) hot-dip galvanized coating.

2.3 LATH

- A. Expanded-Metal Lath: Comply with ASTM C 847 for material, type, configuration, and other characteristics indicated below.
1. Material: Fabricate expanded-metal lath from sheet metal conforming to the following:
 - a. Galvanized Steel: Structural-quality, zinc-coated (galvanized) steel sheet complying with ASTM A 653, G60 (ASTM A 653M, Z180) minimum coating designation, unless otherwise indicated.
 2. Diamond-Mesh Lath: Comply with the following requirements:
 - a. Configuration: Flat.
 - 1) Weight: 2.5 lb/sq. yd. (1.4 kg/sq. m).
 - b. Configuration: Self-furring.
 - 1) Weight: 2.5 lb/sq. yd. (1.4 kg/sq. m).
 3. Rib Lath: Comply with the following requirements:
 - a. Configuration: Flat, rib depth of not over 1/8 inch (3 mm).
 - 1) Weight: 2.75 lb/sq. yd. (1.5 kg/sq. m).
 - b. Configuration: Rib depth of 3/8 inch (9.5 mm).
 - 1) Weight: 3.4 lb/sq. yd. (1.8 kg/sq. m).
- B. Welded-Wire Lath: ASTM C 933, fabricated into 2-by-2-inch (50-by-50-mm) openings with minimum 0.0625-inch- (1.6-mm-) diameter, galvanized steel wire.

2.4 ACCESSORIES

- A. General: Comply with material provisions of ASTM C 1063 and the requirements indicated below; coordinate depth of accessories with thicknesses and number of plaster coats required.
1. Aluminum Components: Alloy, temper, and finish recommended by manufacturer with not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 (ASTM B 221M) for alloy and temper 6063-T5.
 2. Galvanized Steel Components: Fabricated from zinc-coated (galvanized) steel sheet complying with ASTM A 653, G40 (ASTM A 653M, Z90) minimum coating designation.

- B. Metal Corner Reinforcement: Expanded, large-mesh, diamond-metal lath fabricated from zinc-alloy or welded-wire mesh fabricated from 0.0475-inch- (1.2-mm-) diameter, zinc-coated (galvanized) wire and specially formed to reinforce external corners of portland cement plaster on exterior exposures while allowing full plaster encasement.
- C. Cornerbeads: Small nose cornerbeads fabricated from the following metal, with expanded flanges of large-mesh diamond-metal lath allowing full plaster encasement.
 - 1. Zinc Alloy: Minimum 0.0207 inch (0.53 mm) thick.
- D. Casing Beads: Square-edged style, with expanded flanges of the following material:
 - 1. Zinc Alloy: Minimum 0.0207 inch (0.53 mm) thick.
- E. Curved Casing Beads: Square-edged style, fabricated from aluminum coated with clear plastic, preformed into curve of radius indicated.
- F. Control Joints: Prefabricated, of material and type indicated below:
 - 1. Zinc Alloy: Minimum 0.0207 inch (0.53 mm) thick.
- G. Foundation Sill (Weep) Screed: Manufacturer's standard profile designed for use at sill plate line to form plaster stop and prevent plaster from contacting damp earth, fabricated from zinc-coated (galvanized) steel sheet.
- H. Lath Attachment Devices: Material and type required by ASTM C 1063 for installations indicated.

2.5 PLASTER MATERIALS

- A. Base-Coat Cements: Type as indicated below:
 - 1. Portland cement, ASTM C 150, Type I.
- B. Job-Mixed Finish-Coat Cement: Material and color as indicated below:
 - 1. Portland cement, ASTM C 150, Type I.
- C. Cement Color: White.

- D. Stucco Finish Coat: Manufacturer's standard factory-packaged stucco, including portland cement, aggregate, coloring agent, and other proprietary ingredients.
- E. Lime: Special hydrated lime for finishing purposes, ASTM C 206, Type S; or special hydrated lime for masonry purposes, ASTM C 207, Type S.
- J. Sand Aggregate for Base Coats: ASTM C 897.
- K. Aggregate for Finish Coats: ASTM C 897 system and as indicated below:
 - 1. Manufactured or natural sand, white in color.

2.6 MISCELLANEOUS MATERIALS

- A. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in portland cement plaster.
- B. Water for Mixing and Finishing Plaster: Potable.
- C. Bonding Agent: ASTM C 932.
- D. Acid-Etching Solution: Muriatic acid (10 percent solution of commercial hydrochloric acid) mixed 1 part to not less than 6 nor more than 10 parts water.
- E. Dash-Coat Material: 2 parts portland cement to 3 parts fine sand, mixed with water to a mushy-paste consistency.
- F. Asphalt-Saturated Felt: ASTM D 226, Type I (No. 15), nonperforated.
- G. Line Wire: 0.0475-inch- (1.2-mm-) diameter, zinc-coated (galvanized), soft, annealed steel wire.
- H. Steel drill screws complying with ASTM C 1002 for fastening metal lath to wood or steel members less than 0.033 inch (0.84 mm) thick.

2.7 PLASTER MIXES AND COMPOSITIONS

- A. General: Comply with ASTM C 926 for base- and finish-coat mixes as applicable to plaster bases, materials, and other requirements indicated.
- B. Base-Coat Mixes and Compositions: Proportion materials for respective base coats in parts by volume per sum of cementitious materials for aggregates to comply with the following requirements for each method of application and plaster base indicated. Adjust mix proportions below within limits specified to attain workability.
- C. Fiber Content: Add fiber to following mixes after ingredients have mixed at least 2 minutes. Comply with fiber manufacturer's written instructions but do not exceed 1

lb/cu. ft. (16 kg/cu. m) of cementitious materials. Reduce aggregate quantities accordingly to maintain workability.

- D. Two-Coat Work over Concrete Unit Masonry: Base-coat proportions as indicated below:
 - 1. Base Coat: 1 part portland cement, 3/4 to 1-1/2 parts lime, 3 to 4 parts aggregate.
 - 2. Base Coat: 1 part masonry cement, 3 to 4 parts aggregate.
 - 3. Base Coat: 1 part plastic cement, 3 to 4 parts aggregate.

- E. Job-Mixed Finish Coats: Proportion materials for finish coats in parts by volume for cementitious materials and parts by volume per sum of cementitious materials to comply with the following requirements:
 - 1. Proportions using sand aggregates as indicated below:
 - a. 1 part portland cement, 3/4 to 1-1/2 parts lime, 3 parts sand.
 - b. 1 part plastic cement, 1-1/2 parts sand.
 - c. 1 part portland cement, 1 part masonry cement, 3 parts sand.
 - d. 1 part portland cement, 1-1/2 to 2 parts lime, 3 parts sand.
 - e. 1 part masonry cement, 1-1/2 parts sand.

- F. Factory-Prepared Finish Coats: Add water only; comply with finish coat manufacturer's written instructions.

- G. Stucco Finish Coat: Add water only; comply with stucco manufacturer's written instructions.

2.8 MIXING

- A. Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF LATH AND FURRING, GENERAL

- A. Standards: Comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring," and with requirements of ASTM C 1063.

- B. Install supplementary framing, blocking, and bracing at terminations in work and for support of fixtures, equipment services, heavy trim, grab bars, handrails, furnishings, and similar work to comply with details indicated or, if not otherwise indicated, to comply with applicable written instructions of lath and furring manufacturer.
- C. Isolation: Where lathing and metal support system abuts building structure horizontally and where partition or wall abuts overhead structure, sufficiently isolate from structural movement to prevent transfer of loading from building structure. Install slip- or cushion-type joints to absorb deflections but maintain lateral support.
 - 1. Frame both sides of control joints independently and do not bridge joints with furring and lathing or accessories.
- D. Install additional framing, furring, runners, lath, and beads, as required to form openings and frames for other work as indicated. Coordinate support system for proper support of framed work that is not indicated to be supported independently of metal furring and lathing system.

3.2 PREPARATIONS FOR PLASTERING

- A. Clean plaster bases and substrates for direct application of plaster, removing loose material and substances that may impair the Work.
- B. Etch concrete and concrete unit masonry surfaces indicated for direct plaster application. Scrub with acid-etching solution on previously wetted surface and rinse thoroughly with clean water. Repeat application, if necessary, to obtain adequate suction and mechanical bond of plaster (where dash coat, bonding agent, or additive is not used).
- C. Apply bonding agent on concrete and concrete unit masonry surfaces indicated for direct plaster application; comply with manufacturer's written instructions for application.
- D. Apply dash coat on concrete surfaces indicated for direct plaster application. Moisture dash coat for at least 24 hours after application and before plastering.
- E. Install temporary grounds and screeds to ensure accurate rodding of plaster to true surfaces; coordinate with scratch-coat work.
- F. Flashing: Refer to Division 7 Sections for installing flashing as indicated.
- G. Surface Conditioning: Immediately before plastering, dampen concrete and concrete unit masonry surfaces that are indicated for direct plaster application, except where a bonding agent has been applied. Determine and apply amount of moisture and degree of saturation that will result in optimum suction for plastering.

3.3 PLASTER APPLICATION

- A. Plaster Application Standard: Apply plaster materials, composition, and mixes to comply with ASTM C 926.

- B. Do not use materials that are frozen, caked, lumpy, dirty, or contaminated by foreign materials.
- C. Do not use excessive water in mixing and applying plaster materials.
- D. Flat Surface Tolerances: Do not deviate more than plus or minus 1/8 inch in 10 feet (3 mm in 3 m) from a true plane in finished plaster surfaces, as measured by a 10-foot (3-m) straightedge placed at any location on surface.
- E. Grout hollow-metal frames, bases, and similar work occurring in plastered areas, with base-coat plaster material, and before lathing where necessary. Except where full grouting is indicated or required for fire-resistance rating, grout at least 6 inches (152 mm) at each jamb anchor.
- F. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other.
- G. Plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where interior plaster is not terminated at metal frame by casing beads, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
- H. Corners: Make internal corners and angles square; finish external corners flush with cornerbeads on interior work, square and true with plaster faces on exterior work.
- I. Number of Coats: Apply plaster of composition indicated, to comply with the following requirements:
 - 1. Three Coats: Over the following plaster base:
 - a. Metal lath.
 - 2. Two Coats: Over the following plaster bases:
 - a. Concrete unit masonry.
- J. Finish Coats: Apply finish coats to comply with the following requirements:
 - 1. Float Finish: Apply finish coat to a minimum thickness of 1/8 inch (3 mm) to completely cover base coat, uniformly floated to a true even plane with fine-textured finish matching Architect's sample.
 - 2. Trowel-Textured Finish: Apply finish coat with hand-troweled-textured finish matching Architect's sample.
 - 3. Dash Finish: Machine-apply finish-coat plaster in 2 coats evenly and uniformly to produce textured finish matching Architect's sample.
 - 4. Prepared Finish: Apply stucco finish coats, acrylic-based finish coats, and other factory-prepared finish coats according to manufacturer's written instructions.
 - 5. Exposed-Aggregate Finish (Marblecrete): Apply bedding coat of finish-coat plaster to not less than the following thickness and straighten to a true,

reasonably smooth surface with rod and darby; allow bedding coat to set up until its consistency permits application of exposed aggregate. Apply aggregate to perimeter of panel areas and work toward center of panels; tamp lightly and evenly to achieve embedment and to bring surface to even plane matching Architect's sample.

- a. Bedding-Coat Thickness: Not less than 3/8 inch (9 mm) for maximum exposed-aggregate size of 1/2 inch (13 mm) or less.
- b. Bedding-Coat Thickness: Not less than 1/2 inch (13 mm) for maximum exposed-aggregate size of 5/8 inch (16 mm).

- K. Moist-cure plaster base and finish coats to comply with ASTM C 926, including written instructions for time between coats and curing in "Annex A2 Design Considerations."

3.4 CUTTING AND PATCHING

- A. Cut, patch, replace, repair, and point up plaster as necessary to accommodate other work. Repair cracks and indented surfaces. Point-up finish plaster surfaces around items that are built into or penetrate plaster surfaces. Repair or replace work to eliminate blisters, buckles, check cracking, dry outs, efflorescence, excessive pinholes, and similar defects. Repair or replace work as necessary to comply with required visual effects.

3.5 CLEANING AND PROTECTING

- A. Remove temporary covering and other provisions made to minimize spattering of plaster on other work. Promptly remove plaster from door frames, windows, and other surfaces not to be plastered. Repair surfaces stained, marred or otherwise damaged during plastering work. When plastering work is completed, remove unused materials, containers, equipment, and plaster debris.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure plaster work is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 09220