

# 09200 METAL STUDS, METAL LATH, SUSPENSION CEILINGS, PLASTER, AND STUCCO

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## SPECIFIER:

CSI MasterFormat 2004 number 09 20 00

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## PART 1 GENERAL

### 1.1 SUMMARY

#### A. Section Includes:

1. Non-load bearing steel studs.
2. Metal furring and lath.
3. Ceiling suspension system.
4. Portland cement plaster and stucco.

#### B. Related Sections:

1. 04221 - Concrete Unit Masonry.
2. 05400 - Light Gage Metal Framing.
3. 06100 - Carpentry.
4. 09900 - Painting of Unpainted Surfaces.

### 1.2 REFERENCES

#### A. American Society for Testing and Materials (ASTM), latest edition:

1. A641/A641M Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
2. A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. A924/A924M Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
4. C150/C150M Specification for Portland Cement.
5. C645 Specification for Nonstructural Steel Framing Members.
6. C754 Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
7. C841 Specification for Installation of Interior Lathing and Furring.
8. C897 Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters.
9. C926 Specification for Application of Portland Cement-Based Plaster.
10. C932 Specification for Surface-Applied Bonding Compounds for Exterior Plastering.
11. C1007 Specification for the Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
12. E119 Test Methods for Fire Tests of Building Construction and Materials.

### 1.3 SUBMITTALS

- #### A. Product Data: Submit manufacturer's product data for cementitious materials, lath, metal support components, and accessories.

B. Material Certificates:

1. Submit producer's certificate for each kind of plaster aggregate indicated materials comply with requirements.
2. Provide detailed shop drawings for metal support systems indicating load calculations, sizing of members, connections and anchorages for review by A/E. Shop drawings and calculations shall be signed and sealed by a Florida registered Professional Engineer and shall show compliance with FBC and ASCE 7.

1.4 QUALITY ASSURANCE

A. Design Criteria:

1. Fire-Resistance Ratings:
  - a. Where plaster systems with fire-resistance ratings are indicated, provide materials and installations identical with applicable assemblies tested per ASTM E119 by fire testing laboratories acceptable to authorities having jurisdiction.
  - b. Provide plaster for fire-resistance rated systems having same aggregate as specified for similar non-rated work, unless specified aggregate has not been tested by accepted fire testing laboratories.
  - c. Portland cement plaster/stucco shall not be used in areas requiring fire-rated construction. Use only accepted listed UL rated materials.
2. Coordinate layout and installation of suspension system components for suspended ceilings with other work supported by or penetrating through ceiling.
3. Clear bonding agents are not allowed.
4. Metal corner beads are not allowed. Use plastic trim accessories.
5. Prefabricated metal or plastic stucco reveals are not allowed. Strike final stucco coat to achieve score patterns. Slope bottom edge of horizontal score lines to dispel water.

B. Mockups:

1. Before installation of plaster work, fabricate mockup panels for each type of finish and application required using materials, including lath and support system, indicated for final work.
2. Build panels 4 feet x 4 feet x full thickness in location indicated, or if not otherwise indicated, as directed by A/E.
3. Demonstrate proposed range of color, texture, and installation to be expected in completed work.
4. Obtain A/E acceptance of panel's visual quality before start of work.
5. Retain panel during construction as standard for judging completed work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Metal Supports:

1. Dale/Incor.
2. Dietrich.
3. Gold Bond Building Products Division.

4. Unimast Inc. (USG Co.)
- B. Expanded Metal Lath:
1. Dale/Incor.
  2. Gold Bond Building Products Div.
  3. South Lath Inc.
  4. Unimast Inc. (USG Co.)
- C. Accessories:
1. Dietrich.
  2. Fry Reglet Corp.
  3. Gold Bond Building Products Div.
  4. Plastic Components Inc.
  5. South Lath Inc.
  6. United States Gypsum Co.
  7. Vinyl Corp., Miami, FL.
- D. Portland Cement Plaster/Stucco:
1. Florida Super Stucco by Lafarge Florida.
  2. Lonestar Products.
  3. Rinker Materials Corp.
  4. Southdown, Inc.
  5. United States Gypsum Co.
- E. One Coat Veneer Plaster Over Cement Board: 3/32" Imperial Finish over 5/8" Durock cement board by US Gypsum Co. over metal framing at 16 inches o.c. maximum or accepted equivalent. UL U407 for 1 hour rating.

## 2.2 MATERIALS

- A. Metal Supports - Suspended and Furred Ceilings or Soffits:
1. Portland Cement Plaster/Stucco Installation: ASTM C926.
  2. Wire for Hangers and Ties: ASTM A641, 16 gage monel.
  3. Rod Hangers: Mild steel, zinc, or cadmium coated.
  4. Flat Hangers: Mild steel, zinc, or cadmium coated or protected with rust inhibitive paint.
  5. Channels:
    - a. Cold-rolled steel, minimum 0.0598" thickness of uncoated base metal, allowable bending stress of 18,000 psi. Protect with rust inhibitive paint or galvanizing complying with ASTM A924 for G60 coating designation.
    - b. Carrying Channels: 1-1/2" deep x 7/16" wide flanges, 475 lbs. per 1,000 feet painted, 508 lbs. per 1,000 feet galvanized.
    - c. Furring Channels: 3/4" deep x 7/16" wide flanges, 300 lbs. per 1,000 feet painted, 316 lbs. per 1,000 feet galvanized.
    - d. Provide galvanized channels for exterior installations.
  6. Hanger Anchorage Devices:

- a. Screws, cast-in-place concrete inserts, or other devices appropriate for anchorage to the form of structural framing indicated and whose suitability for use intended has been proven through standard construction practices or certified test data.
- b. Size devices to develop full strength of hanger minimum 3 times calculated hanger loading, except size direct pullout concrete inserts for 5 x calculated hanger loading.

B. Steel Studs and Runners/Tracks:

1. Non-Load (Axial) Bearing Studs and Runners:

- a. ASTM C645 and complying with following requirements for minimum thickness of uncoated base metal and other characteristics:
- b. Stud Thickness: 0.0179", unless otherwise indicated.
- c. Stud Depth: As indicated on the drawings.

2. Load Bearing (Transverse and Axial) Studs and Runners:

- a. ASTM C955 and complying with following requirements for quality, grade, finish of steel sheet, design thickness of uncoated base metal, and other dimensional characteristics:
- b. Metal Quality: Zinc-coated steel sheet complying with ASTM A653, Coating Designation G60.
- c. Grade A - 33,000 psi Yield Point: Maximum 0.0359" design thicknesses.
- d. Grade D - 50,000 PSI Yield Point: Minimum 0.0598" design thicknesses.
- e. Stud Thickness: 0.0359", unless otherwise indicated.
- f. Stud Flange Width: 1-3/8".
- g. Stud Lip Depth: 1/4".
- h. Stud Depth: 3-1/2" minimum unless otherwise indicated.

C. Vertical Metal Furring:

1. Channel Furring and Braces:

- a. Cold-rolled steel, minimum 0.0598" thickness of uncoated base metal.
- b. Allowable Bending Stress: 18,000 psi.
- c. Protected with rust inhibitive paint finish or galvanizing.
- d. 3/4" deep x 7/16" wide flanges.
- e. 300 lbs. per 1,000 feet with painted finish.
- f. 316 lbs. per 1,000 feet with galvanized finish.

2. Z-Furring Member:

- a. Manufacturer's standard screw-type zee-shaped furring members formed from zinc-coated steel sheet.
- b. Minimum 0.0179" uncoated base metal thickness, complying with ASTM A924, Coating G60.
- c. Design for mechanical attachment of insulation boards or blankets to monolithic concrete and masonry walls.

3. Furring Brackets: Serrated-arm type, minimum 0.0329" thickness of base (uncoated) metal, adjustable from 1/4" to 2-1/4" wall clearance for channel furring.

D. Metal Lath:

1. Diamond Mesh Lath:

- a. Flat: 2.5 lbs. per sq.yd.
- b. Self-Furring: 2.5 lbs. per sq.yd.
- c. Paper Backing: Provide asphalt-impregnated paper factory-bonded to back and complying with Fed. Spec UU-B-790, Type I, Grade D vapor permeable, Style 2.
- d. Lath Attachment Devices:
  - 1) Devices of material and type required by referenced standards and recommended by lath manufacturer for secure attachment of lath to framing members and of lath to lath.
  - 2) Provide resilient clips for attachment of gypsum lath to steel at locations indicated.

2. Welded Wire Fabric Lath:

- a. Weather Protected Exterior Horizontal Surfaces (Soffits, Ceilings, and Other Decorative Elements): Pyro K-Lath, Gun Lath, or other A/E accepted equivalent.
- b. Back of Ceramic Tile (Interior Usage Only): Aqua Lath or other A/E accepted equivalent.
- c. Fire Resistance and Waterproofing (Interior Usage Only): Pyro K-Lath or other A/E accepted equivalent.

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*SPECIFIER: The materials in the following subparagraph apply to elementary school high traffic areas only.*  
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- d. Interior Walls (High Traffic Areas Only): Pyro K-Lath, Gun Lath, or other A/E accepted equivalent.

E. Accessories for Portland Cement Stucco:

- 1. Comply with material provisions of ASTM C926; coordinate depth of accessories with thickness and number of coats required.
- 2. Plastic Trim Accessories: Corner beads, casing beads, control joints, and expansion joints with perforated flanges and fabricated from high impact polyvinyl chloride.

F. Portland Cement Plaster Materials:

- 1. Base Coat Cements: Portland Cement, ASTM C150, Type I or III.
- 2. Finish Coat Cement: Portland Cement, ASTM C150, Type I, white.
- 3. Factory-Prepared Finish Coat:
  - a. Manufacturer's standard product requiring addition of water only. White in color unless otherwise indicated.
  - b. Product: Oriental Exterior Stucco by United States Gypsum Co.
- 4. Sand Aggregate - Base Coats: ASTM C897.
- 5. Aggregate - Finish Coats: ASTM C897, manufactured or natural sand, white in color.

6. Fiber - Base Coat:

- a. Alkaline-resistant glass fibers, 1/2" long, free of contaminants, manufactured for use in Portland cement plaster.
- b. Product: Dur-O-Fiber AR Glass by Dur-O-Wal, Inc.

G. Miscellaneous Materials:

1. Water for Mixing and Finishing Plaster: potable, free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
2. Bonding Agent - Portland cement: ASTM C932.

2.3 MIXES

A. Portland Cement Plaster/Stucco Mixes and Compositions - Base Coats:

1. Comply with ASTM C926 for Portland cement plaster base and finish coat mixes as applicable bases, materials, and other requirements indicated.
2. Base Coat:
  - a. Proportion materials for respective base coats in parts by volume for cementitious materials and 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.
  - b. Adjust mix proportions below within limits specified to attain workability.
3. Base Coats for Three-Coat Work Over Metal Lath:
  - a. Contractor's Option 1:
    - 1) Scratch Coat: 1 part Portland cement, 2-1/2 to 4 parts sand.
    - 2) Brown Coat: 1 part Portland cement, 3 to 5 parts sand.
  - b. Contractor's Option 2:
    - 1) Scratch Coat: 1 part Portland cement, 1 to 2 parts masonry cement, 2-1/2 to 4 parts sand.
    - 2) Brown Coat: 1 part Portland cement, 1 to 2 parts masonry cement, 3 to 5 parts sand.
  - c. Contractor's Option 3:
    - 1) Scratch Coat: 1 part masonry cement, 2-1/2 to 4 parts sand.
    - 2) Brown Coat: 1 part Portland cement, 1 parts masonry cement, 3 to 5 parts sand.
4. Two-Coat Work Over Concrete Unit Masonry:
  - a. Contractor's Option 1:
    - 1) Base Coat: 1 part Portland cement, 3 to 4 parts sand.
  - b. Contractor's Option 2:

- 1) Base Coat: 1 part masonry cement, 3 to 4 parts sand.
5. Fiber Content:
- a. Add fiber to mixes above to comply with fiber manufacturer's directions, maximum 2 lbs. per cu. feet of cementitious materials.
  - b. Reduce aggregate quantities accordingly to maintain workability.
- B. Portland Cement Plaster/Stucco Mixes and Compositions - Finish Coats:
- 1. Job-Mixed:
    - a. Contractor's Option 1:
      - 1) 1 part Portland cement, 2-1/4 to 3 parts sand.
    - b. Contractor's Option 2:
      - 1) 1 part Portland cement, 1 part masonry cement, 2-1/4 to 3 parts sand.
    - c. Contractor's Option 3:
      - 1) 1 part masonry cement, 1-1/2 parts sand.
  - 2. Factory-Prepared Portland Cement Plaster/Stucco Finish Coats:
    - a. Add water only.
    - b. Comply with finish coat manufacturer's directions.
- C. Mixing: 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

- A. Lath and Furring:
- 1. Interior Lath and Furring Installation Standard: Install lath and furring materials indicated for gypsum plaster to comply with ASTM C841.
  - 2. Portland Cement Plaster/Stucco Lath and Furring Installation Standard: Install lath and furring materials indicated for Portland cement plaster to comply with ASTM C926.
  - 3. Install supplementary framing, blocking, and bracing at terminations in work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar work to comply with details indicated or, if not otherwise indicated, to comply with applicable published recommendations of gypsum plaster manufacturer or, if not available, of Gypsum Construction Handbook, latest edition, published by United States Gypsum Co.
  - 4. Isolation:

- a. Where lath and metal support system abuts building structure horizontally, and where partition/wall work abuts overhead structure, isolate work from structural movement sufficiently to prevent transfer of loading into work from building structure.
- b. Install slip or cushion type joints to absorb deflection but maintain lateral support.
- c. Frame both sides of control and expansion joints independently.
- d. Do not bridge joints with furring and lath or accessories.

**B. Ceiling Suspension Systems:**

**1. Preparation and Coordination:**

- a. Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure inserts and other structural anchorage provisions have been installed to receive ceiling hangers to allow development of their full strength and at spacings required to support ceiling.
- b. Furnish concrete inserts and other devices indicated, to other trades for installations before time needed for coordination with other work.
- c. Powder and pneumatic actuated (shot-type) fasteners shall not be used to provide support for construction elements located overhead.

**2. Hanger: Attach hangers to structure above ceiling to comply with Metal Lath/Steel Framing Association (ML/SFA) Specifications for Metal Lath and Furring and with referenced standards.**

**3. Ceiling Suspension System:**

- a. Install components of sizes and spacings indicated but not in smaller sizes or greater spacings than required by referenced lath and furring installation standards.
- b. Wire Hangers: Space maximum 48 inches o.c. parallel with, and maximum 36 inches perpendicular to, direction of carrying channels, unless otherwise indicated, and within 6 inches of carrying channel ends.
- c. Carrying Channels: Space carrying channels maximum 36 inches o.c. with 48 inches o.c. hanger spacing.
- d. Furring Channels to Receive Metal Lath: Space furring channels maximum 16 inches o.c. for 3.4 lb. diamond mesh lath or 24 inches o.c. for 3.4 flat rib lath.

**C. Steel Stud Wall/Partition Support System:**

- 1. Install components for steel stud wall/partition support systems to comply with directions of steel stud manufacturer for application indicated.
- 2. Non-Load (axial) Bearing Stud Systems: Comply with ASTM C754.
- 3. Loadbearing (axial and transverse) Stud Systems: Comply with ASTM C1007 and as indicated.
- 4. Steel Stud Systems to Receive Metal Lath: Comply with requirements of ML/SFA Specifications for Metal Lath and Furring applicable to each installation condition and type of metal system indicated.
- 5. Extend partition support systems to finish ceiling and attach to ceiling suspension members, unless otherwise indicated.



D. Vertical Metal Furring:

1. Metal Furring to Receive Metal Lath: Comply with requirements of ML/SFA Specification for Metal Lath and Furring applicable to each installation condition indicated.

E. Metal Lath:

1. Install expanded metal lath for following applications where plaster base coats are required.
2. Provide appropriate type, configuration, and weight of metal lath selected from materials indicated which comply with referenced lath installation standards.
3. Suspended and Furred Ceilings: Minimum weight of diamond mesh lath, 3.4 lbs. per sq.yd.
4. Exterior Sheathed Wall Surfaces: Minimum weight of self-furring diamond mesh lath, 3.4 lbs. per sq.yd.

F. Plastering Accessories:

1. Comply with referenced lath and furring installation standards for provision and location of plaster accessories of type indicated.
2. Miter or cope accessories at corners and install with tight joints and in alignment.
3. Attach accessories securely to plaster bases to hold accessories in place and alignment during plastering.
4. Accessories - Portland Cement Plaster:
  - a. Corner Reinforcement: Install at external corners.
  - b. Corner Bead: Install at external corners.
  - c. Casing Beads: Install at termination of plaster work unless otherwise indicated.
  - d. Control Joints: Install where an expansion or control joint occurs in surface of construction directly behind plaster membrane, where distance between control joints in plastered surface exceeds 10 feet in either direction, where area within Portland cement panels exceed 100 square feet, where Portland cement plaster panel sizes or dimensions change.

G. Plaster Application:

1. Two-coat plaster over gypsum lath or paper-backed welded wire fabric.
2. Prepare monolithic surfaces for bonded base coats and used bonding compound or agent to comply with requirements of referenced plaster application standards for conditioning of monolithic surfaces.
3. Tolerances: Maximum 1/8" in 10'- 0" from a true plane in finished plaster surfaces, as measured by 10'- 0" straightedge placed at any location on surface.
4. Sequence plaster application with installation and protection of other work, so neither will be damaged by installation of other.
5. Plaster flush with metal frames and other built-in metal items or accessories that act as plaster ground, unless otherwise indicated.
6. Where plaster is not terminated at metal by casing beads, cut base coat free from metal before plaster sets and groove finish coat at junctures with metal.

H. Portland Cement Plaster/Stucco Application:

1. Portland Cement Plaster Application Standard: Apply Portland cement plaster materials, compositions, and mixes to comply with ASTM C926.
2. Number of Coats: Apply Portland cement plaster, of composition indicated.
3. Finish Coat: Floated finish unless otherwise indicated; match A/E's sample for texture and color.
4. Moist cure Portland cement plaster base and finish coats to comply with ASTM C926, including recommendations for time between coats and curing in ASTM C926 Annex A2 - Design Considerations.

### 3.2 ADJUSTING, CLEANING, AND PROTECTION

#### A. Cutting and Patching:

1. Cut, patch, point-up, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections.
2. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dryouts, efflorescence, sweat-out and similar defect, and where bond to substrate has failed.
3. Sand smooth-troweled finishes lightly to remove trowel marks and arises.

#### B. Cleaning:

1. Remove temporary protection and enclosure of other work.
2. Promptly remove plaster from door frames, windows, and other surfaces that are not to be plastered.
3. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering work.
4. When plastering is completed, remove unused materials, containers, and equipment, and clean floors of plaster debris.

#### C. Protection: Provide final protection and maintain conditions, in manner suitable to Installer, that ensures plaster work being without damage or deterioration at time of Substantial Completion.

END OF SECTION